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Editorial Note

The present issue of the Indian Museum Bulletin incorporates selected papers presented at two seminars held recently in the Indian Museum, one devoted to Harappan civilisation and the other to life and works of one of the greatest British indologists, James Prinsep. As a matter of fact two keynote speeches were delivered by two eminent scholars, Prof. B.B. Lal and Prof. B.N. Mukherjee. The former has attempted to show that there was a continuity of traditions in the socio-cultural situation in India. Professor Mukherjee describes the man James Prinsep with multifaceted personality. The post-independence discoveries at different archaeological sites in the sub-continent form the subject matter of a couple of papers. Meteorology and astronomy as gleaned from glyptic records from Harappan culture have been studied by two scholars. The study of skeletal remains of this period as preserved in the Anthropological Survey of India has also been highlighted by a senior anthropologist. Other two papers take a stock of antiquarian remains from various sites of Indus valley preserved in the museums of Calcutta.

Professor Ajay Mitra Shastri deals with Prinsep's contribution to early Indian history followed by Dr. I.K. Sarma who touches upon the most significant contribution of the *savant* - the deciperment of early Indian scripts, Brahmi and Kharosti. Another paper discusses his contribution to Indian numismatics. Scientific genius of James Prinsep based on yet unpublished documents in the National Archives by Dr. Sukumar Sarkar and little known incident of Prinsep's life as gleaned from papers preserved in the State Archives of Allahabad by Dr. O.P. Kejariwal are two most significant articles published in this volume. Outstanding study of this personality of cross cultural knowledge-transfer, particularly in the field of science is the content of a joint paper by scholars associated with the Asiatic Society. Two cities of India - Calcutta and Banaras were the field of activities of Prinsep. Dr. P. Thankappan Nair deals with the Calcutta chapter while Professor R.C. Sharma with Banaras. Dr. Asok Kumar Bhattacharya looks at him as an artist through the canvas of his pictorial view of Banaras. The concluding paper of the seminar proceedings describes him as one of the pioneers of museum movement in India.

This volume includes a list of Indian metal sculptures in the Archaeology section of the Indian Museum and a review article on architecture of Mughal India by Dr. R. Nath.

November, 1999
Indian Museum, Calcutta

Shyamalkanti Chakravarti
Director

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THE INDUS FLOWS ON

B. B. Lal

Nothing could be more ironical than the fact that the very river, Indus, from which India derived its name is no longer within its boundary. Yet, it is a matter of great pride that the civilization named after that river still flows on in this country. The big settlements of the Indus Civilization may have disappeared, as indeed they did, but the basic of the culture that they stood for continues in one form or another even to this day. This is where the Indian civilization stands out from other ancient civilizations of the world. Did not an eminent Indian poet, Allama Iqbal, say in so many words ?

Yūnāna-o-misra-o-rūmā saba miṭa gaye jahāñ se
Aba taka magara hai bāqī nāma-o-nishāñ hamārā
Kuchha bāta hai ki hastī miṭatī nahīñ hamārī
Sadiyoñ rahā hai dushmana daur-i-zamāñ hamārā

(Ancient civilizations of) Greece, Egypt and Rome have all disappeared from this world, but the elements of our civilization still continue. Although the world-events have been inimical to us for centuries, there is something (some inherent strength) in our civilization which has withstood these onslaughts.

And that inherent strength lies in the basic character of the Indian civilization, which allows for cross-fertilization with other cultures, without losing its identity.

If you and I were school students in the year 1920 and had a textbook on Indian history in our hands, we would have read that India had no civilization worth the name prior to the invasion of Alexander 'the Great' in 326 BC. The then historians had the audacity to say so, in spite of the fact that India had produced the earliest philosophical text in the world, *viz.* the *Rigveda*, which even on a very conservative estimate of Max Muller could not have been later than *ca.* 1200 BC. But this unwarranted assumption of civilizational bankruptcy in India was dashed to the ground just the following year (1921) when out of the very ground, at Harappa in Punjab, Daya Ram Sahni produced the material remains that attested to the existence of a mighty civilization in India in the third millenium BC.

The discovery at Harappa was followed by that at Mohenjo-daro and, in subsequent years, the excavations carried out at these sites brought to light a comprehensive picture of the Indian civilization that was much richer in many ways than the contemporary civilizations of Mesopotamia and

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Egypt. For example, whereas the Indian civilization produced superb evidence of town-planning, the Mesopotamian and Egyptian ones knew no town-planning whatsoever. Not only were the Indian urban centres usually divided into two segments, a Citadel and a Lower Town, but the streets in the latter were also oriented along the cardinal directions, north-south and east-west. An underground drainage system and no sign of encroachment on the streets throughout the occupation of the sites—for more than five to six hundred years, is ample evidence of the civic sense of the people. The vivacious dancing girl from Mohenjo-daro and the excellently carved seals of steatite found at all the sites could be the proud possession of any art-lover, past or present. Sea-borne and overland trade took the Indian merchants on the one hand to Iraq, *via* the Arabian Sea and Persian Gulf, and on the other to Central Asia *via* Afghanistan.

However, in 1947 Indian archaeology received a terrible setback when all the sites of the Indus Civilization passed on to the newly created State of Pakistan. But Indian archaeologists took up the challenge and have put on the map of divided India many more sites than there are in Pakistan. However, it is not the number that matters ; what is more noteworthy is that the indian sites have added altogether new dimensions to our knowledge of this great civilization. The sites I will talk about, though very briefly because of time-constraint, are : Kalibangan in Rajasthan; Banawali and Rakhigarhi in Haryana; and Lothal, Surkotada and Dholavira in Gujarat.

Kalibangan has given to the world the earliest agricultural field ever revealed through an archaeological excavation. It dates back to *ca.* 2800 BC. The field had two sets of furrows, one oriented north-south and the other east-west. The individual furrows in the former set were placed at a distance of 1.9 metres from one another, whereas the mutual distance between those in the latter set was only 30 cm. And herein lay the crux of the matter. This kind of cardinally oriented criss-cross pattern of furrowing is still in vogue in northern Rajasthan, Haryana and even in parts of north-western Uttar Pradesh. Today horse-gram is grown in the narrowly distanced east-west furrows and mustard in the widely spaced north-south set. And there is a reason behind this kind of croppatterning. Both horse-gram and mustard are winter corps. And in winter the sun goes farther south, with the result that long shadows are cast towards the north. Thus, on purpose the mustard plant is grown in north-south furrows so that it does not cast long shadows on the horse-gram plants which are oriented east-west. If, on the other hand, the mustard plants were to be grown in the east-west furrows, their long shadows would fall on the horse-gram plants and severely affect their growth. Shouldn't we take off our hats to our ancestors five thousand years ago who, having fully observed the behaviour of the sun during the winter season, devised this kind of croppatterning ? It is in such traits that the 'Indus flows on'.

We may now pass on to an allied topic, namely that of water-supply. In this regard

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Dholavira has yielded very important evidence. Located in a very inhospitable region, the place suffered from lack of regular water-supply. No doubt alongside Dholavira there do exist two nullahs, but since it rarely rains there these are dry most of the time. Again, whenever it does rain the duration is so short that the nullahs quickly dry up. The hydraulic engineers of Dholavira took up the challenge and put dams across these nullahs, storing water in sizeable reservoirs. From these they took out water-channels and carried water to areas where it was needed.

While this water-supply was all right for the lower parts of the settlement, it was still a problem to supply water to the elites who occupied the 15-20-metre high Citadel. The only answer was to dig wells inside the Citadel, no matter how deep the water-table was. The excavators have discovered therein an ancient well which had a diameter of 4 metres and was lined with stone masonry. Juxtaposed to the circumference of the well, on one side, is a horizontal slab. Its edge has a series of abrasion marks. Those of us who have seen the functioning of deep wells in rural parts of northern India would at once recognize how these marks were produced. The wells being too deep for humans to haul water up, a pair of bullocks is used. To the yoke that passes over their necks, two ropes are tied which, at the other end, are attached to the water-container. The lower of these ropes passes against the edge of the horizontal slab. It is the constant rub of this rope that produces the abrasion-marks on the slab. Does not the Indus water flow on through this rural mechanism for drawing water from the wells ?

And now to cooking, would you believe that the *tandūrī rotī* which has by now taken over most of the restaurants in the country was a creation, again, of the pre-Harappans. At Kalibangan have been found *tandūrs*, both of the overground and underground variety. Sounds unbelievable. Doesn't it ? May be the Harappans also enjoyed the *tandūrī* chicken (a hot favourite of non-vegetarians), as indicated by the partly charred chicken bones found in the excavations.

We may now have a look at how the Indus ladies bedecked themselves. Would you believe if I said that they wore *pāyalas* (anklets) around their feet, *kardhanīs* (girdles) around their waist, as do many of the womenfolk in northern India, or multispiral bangles around their arms, as do the Marwari ladies in Rajasthan, or a *chauk* (a conical ornament) on their forehead, as do the womenfolk, particularly during marriages, in Punjab and Haryana. The Harappan ladies used an ivory comb which was roughly squarish in shape with teeth on both the upper and lower edges. It is precisely this kind of comb that was in use in rural north India prior to its replacement by the single-sided comb in plastic. One may have seen a special kind of toiletry-gadget in the market. Made of copper, it consists of three small tools : a tweezer used for plucking unwanted hair from the inner side of the eyelid; a miniature pointed tool used for cleaning spaces between the teeth; and another tool with a tiny cup at its end used for removing wax from inside the ear.

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It is more or less the same kind of gadget that Indus people used. But all these similarities, denoting a cultural continuity pale into insignificance when I let you know that the Indus women also applied vermilion to their *māṅga* (central space when the hair is parted to right and left). This is clearly borne out by terracotta figurines from Mehrgarh and Nausharo. Shown in black colour, the hair is parted in the middle and the partition-line is given a red colour. In addition, the ornaments are painted in yellow, indicating that these were of gold. Today, amongst the Hindu women the medial line of *sindūra* is a sign of being married. That is signified the same status in the case of the Indus women can only be guessed.

'Tame kema chho ?', this is how you are likely to be greeted, in almost any part of the world you may visit. A Gujarati entrepreneur is always there. And this is not a modern phenomenon. In the period just before the Christian era, Bhṛigukachchha (modern Broach) in Gujarat was an important sea-port, and merchants sailing out carried with them, amongst other things, even the national bird, peacock. The Buddhist *Jātakas* bear testimony to this. But from the first to the third millenium BC it is a far cry. Yet it is verily true. The Mesopotamian king, Sargon of Akkad, claims that ships from Meluhha, usually identified with the region covered by the Indus Civilization, used to be berthed at the harbours in his territory. And this is what Enki says of Meluhha : 'May your bird be the *haja* bird, and may its call be heard in the royal palace'. The *haja* bird has been identified by scholars with the peacock. And if that were not enough, we have further testimony of this national bird of India in Western Asia. A recently discovered seal from Bahrain, in a third millennium context, bears, besides an inscription in the typical Harappan script and a charging unicorn (or bull ?), a peacock as well. That the bird had not been faithfully delineated need not be an issue, since the local artist who carved the seal for an Indian merchant, evidently settled in Bahrain, could not do justice to the figure.

That Gujarat and ancient Gujaratis were long set for maritime trade is duly borne out by the discovery at Lothal of a dockyard which, incidentally, is the earliest dockyard known to humanity. It belongs to the Mature Stage of the Indus Civilization. Close by there stood a warehouse to store the incoming and outgoing goods. The discovery of a seal of what is known as the 'Persian Gulf' style at Lothal clearly attests to the presence of merchants from that area.

We may now pass on to yet another aspect of the Harappan Civilization, *viz.* whether the entire population was at one and the same social level or was there any stratification ? Since the Harappan seals and other inscriptions have not yet been deciphered (in spite of so many claims made in that regard), there is no documentary record to throw light on this topic. Nevertheless an attempt can be made through a close study of the structural remains and their association with the occupants. For example, at Kalibangan the settlement was divided into two parts, a Citadel on the west and a Lower Town on the east. The Citadel was further divided into two parts by means of a medial east-west wall. In the southern

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part there were platforms on which have been identified ritualistic structures, to which we shall refer in some detail a little later. In the northern part of the Citadel there lived most likely the priests who conducted/supervised the rituals. The Lower Town, with its multiple criss-cross streets, contained houses of people who were engaged in agriculture and/or trade, as indicated by the discovery therein of related artefacts, seals and sealings. Both the Citadel and the Lower Town had fortification walls around them. But to the south of the Citadel there was an area which did not have any kind of safety enclosure. Here the houses also were small. In this area a lot of pottery-making rubbish was found, indicating that at least some of the occupants were potters. In this context, one may well recall the workmen's barracks and corn-thrashing platforms at Harappa, which lay in the shadow of the Citadel, immediately to its north. All this shows that there was a class in the Harappan society that was underprivileged. The overall picture thus seems to be that there were at least three classes in the Harappan society : *viz.* a priestly class occupying perhaps the highest position (as suggested by their location in the Citadel); an agricultural-cum-trading community, financially well off and residing in the fortified Lower Town; and an economically deprived class living in barracks or small tenements and serving the needs of the other two higher classes. It has also been observed that in most cases there was a continuity in the nature of house-contents, indicating that the successive generations continued to follow the profession of their parents. In all likelihood, therefore, the class-distinction became rigid as time passed. It may thus not be unreasonable to assume that the seeds of the later-day caste-system had already been sown during the Harappan times. The priestly class of the Citadel may have given rise, in the course of time, to the *Brāhmaṇas*; the agriculturist-cum-trading class of the Lower Town to the Vaiśyas; and the unfortunate barrack-(slum-) dwellers to the socalled *Śūdras*. In the Harappan Civilization there is hardly any evidence of warfare-equipment. Thus, a separate *Kṣatriya* class may not have existed then, but may have emerged subsequently, as and when the need arose. It is the work-based social division that Lord Kṛṣṇa also speaks of in the *Bhagvadgītā* :*'Chāturvarṇyam mayā sṛiṣṭam guṇa-karma-vibhāgaśaḥ'* i.e. 'By me has been made the four-fold division (of the society) based on the aptitude and functions (of the people)'.

And now to the religious beliefs and practices of the Indus people. In the houses in the Lower Town at Kalibangan one of the rooms was earmarked for *pūjā* (ritual worship). In it there lay what have been called 'fire-altars', in the absence of a better name. (These have nothing to do with the fire-altars of the Parsis.) The Kalibangan altars were sunk in the floor to a depth of about 20-25 cm and measured approximately a metre by half-a-metre on plan. The sides were lined with clay plaster. Roughly in the middle there stood a stele of clay, sometimes fired, measuring about 30-40 cm in height. Around this stele were placed biconvex 'cakes' of clay, signifying some kind of 'offering'. Another noteworthy feature of these

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'fire-altars' was their location. These were placed in such a way near a wall that anyone using them would have to face the east.

In the southern part of the Citadel at Kalibangan, there were a series of platforms. On one of them there stood a series of seven contiguous fire-altars, running in a north-south direction. Though very much disturbed subsequently, these had the usual central stele and the 'cakes'. Behind the row there was a north-south wall, reconfirming the observation made in the case of the altars in the Lower Town, *viz.*, that the worshipper had to face the east while performing the ritual. A little to the west of these altars there lay embedded in the ground a pot with ash and charcoal, indicating that in it fire was kept burning for ready use. Right in the neighbourhood there were a well and brick-paved bathing platform, suggesting that some kind of ceremonial bathing by the worshippers constituted a part of the ritual. Don't bath and worship go together in India even now ?

Vedic literature is full of references to altars associated with fire (*yajña-kuṇḍas*). While there may well be variations in the details of the altars unearthed at the Indus sites and those mentioned in the literature, the basic concept of worship associated with rituals in which fire played an important role is nonetheless clearly perceptible in both the cases. And even today rituals associated with fire are in vogue. Does not the Indus fire burn on ?

We may now turn our attention to the non-ritual aspects of Harappan religion. And that is no less revealing. The people practised what we now call the *āsanas*. This is indicated by a number of terracotta human figures shown in various *yogic* postures (TP). And, indeed, the matter did not end there. While the *āsanas* constitute only the third stage in the integrated *Yoga* scheme of Patañjali, we have evidence of even the more advanced stages in that ladder. The well known figure of the 'priest' from Mohenjo-daro shows him in *dhyāna-mudrā*. For all one can make out, his eyes are introvert and he seems to be engrossed in deep meditation. And this is what the *Bhagvadgītā* (Chapter 6, verse 13) seems to enjoin when it uses the term *'sampreksya nāsikāgram'*, while expounding the technique of meditation. This term has been taken to mean fixing the gaze either at the 'tip' or the 'root' of the nose. At another place in the *Bhagvadgītā* there occurs the term *'bhruvor-madhye'* which clearly means between the eyebrows. At this point is located the *ājñā-chakra*, where the mystic experiences the visions. In Western terminology this point is called the 'Seat of Christ Consciousness'. Does it not indicate that the Integrated Yogic System had its origin during the Hrappan times.

I would like to conclude taking up an allied question, *viz.* Who were these Harappans ? What language did they speak, Sanskrit or Dravidian ? As I have stated earlier, all attempts at the decipherment of the Indus script have been futile. Thus, as of now only circumstantial evidence can be of some avail. All that can be briefly stated here is that the theory of Aryan invasion of

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India is a complete myth. Archaeologically, there is no evidence of any intrusive alien material culture overtaking the Harappan repertoire. Likewise, there was no biological infiltration. In other words, there has been a continuity of the Harappan Civilization, with the usual kinds of evolutionary/devolutionary changes. In case some of you are further interested in the issue, you are invited to go through the Appendix to my recently published book, *The Earliest Civilization of South Asia.*

Once again, I may be permitted to repeat that though the Indus no longer flows within the Indian territory (except for a very brief stretch in its extreme north), the cultural ethos which the Indus Civilization represented still flows on in the country. Indeed, *Yahī bāta hai jo hastī miṭatī nahīṅ hamārī*

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FORM OF THE HARAPPAN CIVILIZATION AS REVEALED FROM THE EXCAVATIONS AT BALU, HARYANA

S. P. Shukla

The protohistoric mound of Balu village is situated at a distance of 22 kms from Kaithal district headquarters towards south in Haryana state. It lies near the Narwana branch of the Bhakhara canal and is approachable through the canal road from Devan village situated on Kaithal-Jind highway. The ancient mound is located at a distance of 3 kms from Balu village in the north direction.

This ancient settlement (29 40' N; 76 22' E) was brought on the archaeological map of India by Suraj Bhan and Jim G. Shaffer during the exploration work conducted in 1977. The surface finds indicated the existence of the relics of pre-Harappan, Harappan and late Harappan cultures. The site was later on chosen for the archaeological excavations by the Department of Ancient Indian History, Culture & Archaeology, Kurukshetra University, Kurukshetra which lasted for more than one decade from 1978-79 to 1989-90, 1992-93 to 1994-95 and 1996-97. Each year a few trenches were laid. The paucity of funds prolonged the excavation work for a longer duration. Each excavated trench measured 6×6 m leaving 50 cms baulk in between two trenches. Several trenches were excavated to unearth the relics of past cultures at the mound of Balu.

The mound covered an extensive area which measured 250 mts. (EW)×200m (NS). It had a deposit of 4.50 m. above the surrounding levels. The evidence obtained from the excavations has thrown light on the first settlers at the site, the arrival of the Harappan people and the growth of the site into a fortified settlement and its gradual decline. This evidence is remarkable for the understanding of the eastern form of the Harappan civilization which is not known from the excavation at Kalibangan, Banawali or any other site of Punjab or UP.

The evidence obtained at Balu through the spade work have been divided into three phases A, B and C primarily on the basis of pottery tradition successively representing the pre-Harappan, Harappan and late Harappan cultures. In all 4658 antiquities have been recorded during the excavations.

The earliest phase at Balu, which has a deposit of 1.00 m. yielded pre-Harappan

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pottery, other than the use of mud-bricks (size 1:2:3) in house construction and a few antiquities.

It is interesting that the pottery is partly comparable with the Kalibangan I, Banawali I and a few other sites of Haryana. But the ceramic with white paintings was not in use. No complete structures have been found in the excavations. At one place the evidence of mud-brick wall has been found. In one trench evidence of a double oven existed. In trench H 1 a deep circular pit was dug out. It is further interesting that the early settler of Balu raised a bundh made of kankara-mixed clay obtained from river bank to save their habitation from the floods of the river. This river was most probably Apaga mentioned in the hymns of the *Rigveda*. These people seem to have had contact with pre-Harappans and Harappans living in the region. The evidence of blackish debris, found on the southern side of their habitation, indicated the existence of craft activities. Their habitation spread over 6700 sq. m. area.

The paleobotanical samples collected by Dr. K. S. Saraswat, Birbal Sahni Institute of Paleobotany, Lucknow University, Lucknow have revealed important evidences in the context of pre-Harappans (*c.* 2300-2000 BC). The pre-Harappan levels at Balu yielded a variety of cereals and legumes. It included rice (Oryza sativa), hulled-barley (Hordem vulgare), two forms of wheat; dwarf-wheat (Triticum sphaero — coccum) and bread-wheat (Triticum aestivum), green gram/mung (vigna radiata), horse-gram/kulthi (Dolichos bioflorus) and common vetch (Vicia Sativa). The people also used to grow musk-melon/Kharbuza (Cucumis melo) and water-melon/tarbuza (citrullus lanatus). The evidence of water-melon provides the first definite evidence of its cultivation in the context of pre-Harappan civilization. Besides, Balu has also yielded the fruits of wild jujuhe/Jharbei (Ziziphus nummularia) and chebulic-myrabolan/harra (Terminalia chebula). The latter is an important tanning material, it is laxative, stomachic, tonic and has alterative properties and forms one of the constituents of *triphala*. It is significant that pre-Harappan of Balu knew its use.

In the region of Haryana three Harappan sites — Rakhigarhi, Banawali and Balu were fortified settlements. The settlement at Balu belonged to the later stage of the civilization which can be dated between 2000-1700 BC. It seems from the evidence that settlement at Balu came into existence after the abandonment of Banawali.

The Harappan deposit at Balu measuring 2.20 m. thickness is distinguished by typical pottery, brick-size and other material equipment. The pre-Harappans and Harappans lived together as evident by simultaneous use of non-Harappan and classical Harappan pottery.

The Harappan relics at Balu are divisible into several sub-stages — *viz.* pre-fortification stage, phase of fortification, late classical stage and post-Harappan stage.

The evidences of pre-fortification stage have been obtained from south-west and western part of the mound. The use of Harappan bricks (size 1:2:4), have been attested in the construction of houses. Apart from this, a few betel-leaf shaped bhattis

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have also been found resting on the virgin soil.

The Harappans later on constructed fortification wall of enormous width (12m) whereas it measured 5-7 m at other Harappan settlements. It enclosed an area 108m NS and 96m EW. It existed on the elevated mound formed by the pre-Harappan habitation. In the middle part of the eastern wall offset alongwith stairs were provided. It had a big bastian in the northern wall of this fortification. The southern wall had a small bastian like projection on the inner side. The entrance to this fortified settlement was provided on the east-south direction. The subsequent habitational activities and erection of bhattis caused great damage to the fortification wall.

The Harappan settlement had planned orientation with lanes and sub-lanes having width from 1.45 to 1.90 cms. The earlier houses had thick walls and were constructed maintaining a distance between fortification and the habitation. A few of the houses were constructed on the foundation of the earlier Harappan house. It may indicate the continuity of one family at a particular area. In one case the evidence of a platform for the construction of house was obtained. The evidence of construction of two varieties of houses is known from Balu. In one variety three-roomed house was provided with a spacious courtyard in its front. The other variety resembled L shape house. The evidence of soakage jar placed in the lane have also been found. Besides the evidence of fire places and ovens have been attested. In trench H 1 a public place was maintained as community fire place. Several fire places with cakes and bones were found at this place. The burnt cereals (barley and wheat) were found scattered in large quantity. This place was smoothened applying whitish clay. Perhaps it served as a religious centre for the Harappans of Balu settlement.

The excavations at Balu indicate that the Harappans later on constructed their houses with thin walls using one brick as the width of the structure, but all the structures continued to be laid in a planned manner. In this phase also the houses were found with typical Harappan pottery and antiquities and brick size. A house built by the Harappans had a *pucca* drain. No such evidence was encountered in any other part of the Harappan settlements.

The Harappan levels at Balu have yielded a number of significant antiquities which include a piece of gold ornaments, a chert core, blades of chert, copper objects (chisels, bangles, knife, ring, etc.), beads of semi-precious stones, faience, streatite, clay, paste, bangles of terracotta, faience and shell, terracotta cakes, nodules, balls, toycart frames, animal figurine, stone gamesmen, pestles, querns. A terracotta bull figurine with conjoined legs related to pre-Harappan tradition was found with Harappan assemblage. A steatite seal with *swastik* symbol have also been discovered from Balu. The use of Harappan script is attested from its engraving on an earthen pot. Discovery of three small ear-studs displaying concentric circles and other designs made of steatite is quite interesting. One such find has also been reported from Bara (Punjab), but the examples from Balu are quite charming and speak about the aesthetic taste of the crafts-

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man. In this connection mention may be made about a terracotta mound (35 cm in length) which was used for smelting metal bars. No such find has been reported from any other Harappan site.

The evidence of the use of the pottery tradition during the Harappan phase is also noteworthy. It included non-Harappan as well as Harappan pottery types. The non-Harappan pottery is characterised by painted broad bands on the neck, use of white paintings, internally incised decoration and handmade cups. The Harappan pottery included all the classical shapes (perforated pot, beakers, goblets, vases, dishes, dish-on-stands storage jars) and paintings in black colour including intersecting circles, animal and fish motifs, pipal leaf design, hatched leaves, horizontal bands etc. and incised designs (cord-impressions, nail-marks and pairing marks). The influence of cemetery H (painted figure of a peacock) and Bara tradition of decoration is also attested in the late phase of Harappan habitation.

The Harappans continued to grow rice, hulled-barley, dwarf-wheat, break-wheat, horse-gram, gree-gram as their predecessors did. The excavations of the Harappan phase at Balu have provided the evidence of naked-barley (Hordeum Vulgare Var, nudum), lentil (Lens, culinaris), Egyptian clover/barseem (Trifoolium alexandrinum), field-pea (Pisum arvense), chick-pea/gram (Cicer arietinum), grass-pea/khesari (Lathyrus sativus) and till (Sesamum indicum).

Besides, the recovery of a broken stone of date (phoenix sp.) and two seeds of grape (Vitis Vinifera) indicates the inclusion of fruits in their subsistence economy. Kundroo (Coccinia cordifolia), used as vegetable and eaten raw when ripe was also recovered. Garlic, one of the most significant finds of Balu related to the Harappan phase. In the opinion of Saraswat most probably garlic had its origin in Central Asia, it was used as a food, medicine or religious object by the first Egyptian dynasty (3200 BC). In the Egyptian medical papyrus *Codex Ebers* dateble to 1550 B.C., of more than 800 therapeutic formulae, 22 mentioned garlic for a variety of ailments. Garlic was included in the daily diet of the wealthy Egyptians and also in their funeral offerings. According to Saraswat "Balu in India has furnished the sole record of garlic in the archaeological context of south and south-eastern India." The evidence is, therefore, to be reckoned with.

The Harappan elements at Balu continued to gradual decline and decay of the Harappan tradition. In the western part of the mound the habitation continued. The area of the fortification was upraised by spreading ashy soil. The houses were constructed of mud-bricks (size 1:2:4). A pranala was found studded on the floor of a workshop in which a few pots were also embedded. The pottery showed degeneration with incised comparable with Banawali III, Mitathal IIB. The relics included circular bakes, faience bangles, bangles of terracotta, terracotta balls, beads of stone, etc. No chart blade was recovered. A number of *bhattis*, of different sizes, were found which appear to have used for different crafts.

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HARAPPAN CIVILIZATION AN OVERVIEW IN THE LIGHT OF RECENT DISCOVERIES

Asok Datta

One of the most outstanding contributions of the Indian Archaeology which delighted the Indians is the discovery of Indus valley Civilization. The trial excavations at Harappa in 1921 by Daya Ram Sahani and at Mohenjodaro in 1922 by R. D. Banerji have brought to light the ruins of an ancient civilization that buffled the world. The discovery has pushed back the cultural heritage of India from 3rd C. B. C. to 3rd Millenium. Subsequently large scale excavations were undertaken at Mohenjodaro by Sir John Marshall (1931) and at Harrappa by M. S. Vats (1940) which revealed a comprehensive picture about the lost civilization. Since it was first identified at Harappa, it is also known as Harappan Civilization.

It occupies a geographical area which is larger than the geographical area occupied by Pakistan. Its total land coverage was roughly one million square kilometre while the geographical area occupied by the present state of West Bengal is only 87, 600 square kilometre which means it was ten times larger than West Bengal. Sutkagendor in Pakistan/Afghanistan border is the westernmost limit while Lothal is the southeasternmost limit. The eastern limit was extended upto Sharanpur in U.P. and its northern limit was upto Manda in Jammu on the one hand and Sortughai in northern Afghanistan is the other end of this limit. It was larger than Mesopotamia and Egyptian Civilizations. The vast geographical area occupied by the Harappans shows the dimension and magnitude of this civilization. Despite success over the years, the origin, growth and decay of this unique civilization remain unresolved. The present paper will make an overview of these problems in the light of recent discoveries.

Genesis

Regarding the origin or genesis of Indus valley Civilization, the scholars are sharply divided into two groups namely focusing either foreign influence or indigenous growth. Those who view the Harappan cultural development as intrusive one tried to explain its genesis as western diffusionary mechanism. They believed that the technological and social innovations made in Mesopotamia were adopted by indigenous people to local conditions at Harappa. The Mesopotamian culture which exhibited the

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development of strong socio-political class, centralisation of authority and the rise of early city states may well fit the cyclic model of development. Many scholars seriously believed a similar situation in the Indus Valley. But recent excavations and reinterpretation of existing data on mature Harappan culture clearly indicate that Mesopotamian models are not applicable to South-Asian context (Shaffer, 1993).

Stuart Piggott who made a subjective analysis of Harappan materials during early fifties provided the basic framework or sysnthesis of Harappan culture. According to Piggott (1950) the uniformity of Harappan culture represents "a monotonous regularity of a highly organised community under some strong system of centralised government, controlling production and distribution and no doubt levying a system of tolls and customs throughout the territory under its rule"... He further states that "the uniformity reflected a conservative attitude towards culture change which was finally responsible for stagnation and subsequent disintegration of the Harappan culture"... The framework thus provided by Piggott continued to influence the Archaeologists for a long period and remained still valid as no other alternative is available. However, the similarity of objects neither reflects a conservative attitude towards culture change nor indicates the types of polical organisations.

The latter group of scholars view the Harappan culture as indigenous and seek to explain the genesis within the soil. Mughal (1970), being the foremost in this group has suggested, "although these cultures do not singly acted as direct ancestor, but when they are combined together they share many characters which definitely be considered as the early phase of Harappan culture". Following Mughal the major thrust on archaeological research in India was directed to find out the link and the relationship between these pre-Harappan and mature Harappan cultures in terms of typology, stratigraphy and chronology. But whether there was any link or relatioship between them or what transpired the Kot-diji, Amri, Sothi or Mehergarh people to create mature Harappa basically remain unsolved because the major point of disagreement of a possible link between them lies in the uniformity of Harappan cultural traits and regional cultural diversity on the other. It may be pointed out here that Wheeler (1968), and following him many archaeologists did not find any genetic relationship between them. But current analysis based on recent data shows that the foundation of Harappan culture lies within these pre-Harappan settlements. There is hardly any doubt that the urban character of Harappa was laid down long before the emergence of mature Harappa. Mehergarh in Baluchisthan has provided the much needeed base for Harappan urbanism.

Following Sir John Marshall, F. R. Allchin (1993), developed convergent and digervent theories to explain the Harappan culture. According to Allchin, "this convergent tendency is indeed already clearly visible during early Indus period and this fact when became more apparent it makes the change of style from early to mature In-

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dus....." He further stated that the convergent tendency reached a new height with the growth of Mohenjodaro as a city.

But it is difficult to accept his divergent theory which explains that the cultural differences found in the pre-Harappan cultures continued even after the imposition of mature Indus style. He subscirbes this divergences to local reactions against the convergent tendency.

In support of his divergent theory he suggested the arrival of a new group, possibly Indo-Aryan who influenced the final stage of Indus culture. He also referred to existence of two types of religious practices prevalent in Harappa on the basis of terracotta and stone *liṅgas* from Harappa, Mohenjodaro and Surkatado and fire-alters from Kalibangan. The former was associated with the indigenous people and the latter was associated with the intrusive Indo-Aryan and the result was a cultural synthesis. He finally concluded that the Indo-Aryans moved towards Southern Indus which is ultimately responsible for the decentralization of urban character.

It is very difficult to accept the theory of dual authorship of Indus culture. Traditionally Aryans are associated with fire. If we accept that the so called fire alter was real fire-alter, but then does it mean that it was associated with the Indo-Aryans. Because fire worship is a universal form of worship. Moreover, the so called fire-alters as claimed by Allchins and B. B. Lal (1998), has been described by B. K. Thapar as simple hearth with a mud pillar at the centre. Even so does it not mean that the so called Indo-Aryans were confined to Kalibangan alone ?

Before, taking up the issue relating to the genesis of Harappan culture, it is better to start with the observation made by Fairservis (1975:241-42), in this regard. He observed that "the knowledge about mature Harappan urban centres has been collected at the expense of knowledge about the equally important rural aspects of this culture".

The genesis or the origin of Indus culture can be explained in terms of equilibrium model (Binford, 1972) based on Tension zone theory. The theory explains that the equilibrium system regulates the population density below the carrying capacity in a natural environment of a particular region. But if the equilibrium is disturbed by the way of sudden increase of population density of a region, it will offer selective advantage to increase in the efficiency of subsistance economy. Under conditions of increased sedentism, we would expect population growth. Binford therefore concludes that "where there is a marked contrast between two sociocultural units within a relatively restricted geographical region, there would be a tension zone where imigrant colonies from more sedentary group would periodically disrupt the density equillibrium balances of less sedentary group. Under these conditions there would be a strong selective pressure favouring the development of more effective means of production for both the groups within this tension zone".

The distribution of early Harappan sites shows the formation of four distinct cluster

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of sites having characterised by their respective identities (Fig. No. 1). In zone A which roughly covers the Baluchistan upland region (1200 feet above sea level), the loosely organised Neolithic agro-pastoral economy evolved into a crystalised form of semi-urban economy first at Mehergarh (III), and then other sites like Kili-gul-muhammed (IV), Damb sadat (I-III), Rana ghundai (III), Sur-jungle (III), Mundigak (III), Gumla (I), Rahman Dehri (I) etc. around 3500 B. C. to 3000 B.C. By about 2600 B.C. or little earlier there was another movement of people and in the process of movement they created a tension zone at Harappa where the immigrant people from the North-West interacted with the local people at Harappa. The situation thus created at Harappa offered strong selective pressure favouring development of more effective means of productions. The imigrant people had already with them the knowledge of metallurgy, crafts specialization, agricultural knowhow, urban elements etc. The interactions between two socio/cultural and economic groups culminated in the creation of Harappan city with more elaborate system of urban elements.

Zone B comprises the Sind province where the inhabitants of Anjira (III-IV), Kotdiji (I), and Nal, Kulli etc. around 2600 or little later interacted with the local people at Mohenjodaro and the outcome was the emergence of Mohenjodaro City. A similar process prevailed in the other two zones created Dholavira in Gujrat, Ganweriwala in Cholisthan and Rakhi-Garhi in Haryana.

The process of transformation of the early Indus into mature Indus had already started in this region around 2600 B. C. or little earlier with the movement of people from North West to South East direction. But what transpired them to move from their original homeland ? Possibly population increase supplemented by diminishing food resources promted them to migrate to more resourceful or fertile area. This kind of socio-economic transformation is evidently clear by the fact that regional cermac styles were largely replaced by a more unified, but less decorative ceramic type known as Kotdijian towards the upper phase of early Indus culture. The distribution of this ceramic type is found over a wide geographical area starting from Balakot in the South to Sarai-Khol in the North to Kalibangan in the East (Allchin 1983). Many early Harappan sites towards its upper phase shows the overlap of this cermaic type with the mature Harappan ceramic.

Kunal is a very small site occupying 1.2 hectre of land in Haryana which has yielded some important objects from excavation (Ref. in B. B. Lal, 1998), which leave no room to doubt that mature Harappa evolved from early Harappa.

Urban Elements

The outstanding feature of this unique civilization is its town planning which is always divided into two parts namely the citadel and the lower town. It may be pointed out here that the pre-Harappan phase at Rahaman Dheri (pd. I) has yielded evidences of well laid out oblong settlement surrounded by massive defensive wall. The town is divided into two parts by a street running North/West to South/East. At right

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angles to this road houses are seperated by regularly laidout straight narrow lanes. Similar evidences have also been found from many other pre-Harappan sites recalling the basic feature of Harappan town planning. The early phase (pd. I) at Rahman Dheri has been dated to 3340/3160 B.C. Very recently Bist (1989-91), claimed to have discovered a three tier system of town planning at Dholavira namely the citadel or castle, the middle town and the lower town. The Harappan towns are provided with fortifications which differed from site to site. The houses are provided with either underground drainage through the streets or installing soakage pits outside the houses. The bricks either burnt or sundried used for construction works maintained a uniform ratio of 4:2:1, throughout its vast geographical region. Besides the ceramic, stone beads, stone blades, copper objects, seals, sealings and terracotta cakes etc. typical of Harappan culture are found to be distributed throughout the Harappan territory. The freequency of each of these objects may differ from site to site, but nevertheless it reflects a uniform distribution system which one cannot expect without a strong central administrative system controlling the production and distribution of objects.

Lamberg-Karlovasky and Sabloff (1979:203), in a recent writing suggested that "the archaeological evidence does support a view of an authoritarian, hiererchical social and political system : the extraordinary cultural unity maintained over that vast geographical expanse could not have been possible without high degree of centralized authority The large granaries, efficient drainage system and planned settlements required central control"...

The uniformity of material culture of the mature Harappa has been ascribed due to a strong centralised government enforcing rules, governing production and distribution by Piggott (1950), Lamberg & Sabloff (1979) and others while Jim Shaffer (1994) has suggested this uniformity due to the existence of an extensive and intensive internal distribution and communication system.

Jim Shaffer (1993) made a very objective review and pointed out the regional variation found in the Harappan material culture. He based his argument on the basis of recent excavations at Surkotada (Joshi, 1972) and Alladino where he noted the development of regional pottery styles along with Harappan ceramics and the statistical analysis on Harappan objects found from Harappa and Mohenjodaro by Fentress (1976) which shows wide range of variation in the distribution of artifact types. He further pointed out that the excavation at Alladino has revealed almost all the major category of Mature Harappan culture, but despite extensive excavation no evidences of productions of these items at this site have been found which according to him imported from elsewhere. This means that even this small rural settlement site was involved in the Harappan internal trade network. He finally conclude that "The existence of such an internal artifact distribution network would account for the similarity found in the mature Harappan material culture and explain the development of regional diversity noted above".

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However, this uniformity of mature Harappan culture has been challenged by a number of scholars in recent years. According to Fentress (1976), the granaries found at Harappa and Mohenjodaro do not confirm any uniformity in architectural model. At Mohenjodaro it is located in the high mound or citadel area while at Harappa it is located at low mound or lower town surrounded by ordinary domestic structure.

Fentress (1976) even questioned the validity of its being associated with acutal granaries on the ground that the socalled loading dock at Mohenjodaro faces a narrow congested street, making it very unlikely that it could have so functioned as a grain transfer or distribution area. The view of Fentress is supported by Jansen (1979) and Shaffer (1993) who pointed out that there is no positive archaeological evidence to support them either as granaries or reflect any strong centralised Govt. or a redistributive economy.

Jansen (1979) who restudied the materials of Mohenjodaro excavations has challenged the grid pattern town-planning of Harappa and suggested that the gridiron layout existed more in Wheeler's mind than in Mohenjodaro's actual design. He writes "one recognises that there is no actual proof for the famous grid pattern. Only the North/South axis of first street is evident. The second axis to the east is not proved. All other street turn corners and do not fit into a gridiron layout"... The same system of turning corners may be recognised on entering the houses. In general there are no straight access to enter (Jansen, 1979). Supporting the view of Jansen, Shaffer has said that "That vast majority of the gridiron layout of the Harappan sites is represented by dotted lines through unexcavated areas rather than the solid lines of actually excavated streets"... He further pointed out that, "The existence of a cultural norm prescribing the orientation of all buildings according to cardinal directions would itself produce superficial gridiron pattern without the existence of centralised authority or a developed sense of town planning"....

The above statement of Shaffer is very difficult to accept in view of the fact that the laying out of the foundations of all the buildings at cardinal directions and thus forming deliberate or undeliberate grindiron pattern is itself very scientific reflecting their profound sense of town planning particularly in terms of space utilization, parallel streets, air circulation, sanitation and other aspects, the underground drainage running through the streets and soak pits attached to house, courtyard, staircase and many other objects revealed through excavation display a deep sense of town planning.

External Trade

The wealth and prosperity of the Harappan culture are linked up with external trade by many including Asthana (1979), Ratnagar (1981), Potts (1993), Edens (1993), Possehl (1986). All most all acholars have emphasised on external trade as a means of internal development. It is indeed true that Harappan had an elaborate external trade activities. The cuneiform text of Mesopotamia even has given the list of objects imported from Harappa (Possehl, 1993). Be-

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sides, Harappan had also long distance land trade links with Afganisthan, Central Asia, the Iranian Plateau etc. The Harappans were particularly femous for bead making industry. Three important production centres at Chan-hu-daro (Mackay, 1938), Lothal, (S. R. Rao, 1973) and Mohenjodaro have been identificed where the craftsmen made a wide range of products out of raw materials brought from far distant areas.

The raw meterials which were turned into different products include copper, gold, silver, chert, chalcedony, lapis lazuli, shell, timber and cotton etc. How this external trade can be linked up with the socio-economic process ? Trade cannot be one way traffic. The Harappan materials sent to Mesopotamia include seals, etched carnelian beads and ceramics, but what about the Mesopotamian objects sent to India ? Possehl (1993) has pointed out that "...There is a disturbing disparity in the archaeological record in this regard".

The recently discovered Harappan site at Sortughai in Northern Afganisthan has been described by many as Harappan trading centre (Kolh, 1978). It may be pointed out that if external trade was the major purpose of Sortughai settlement then Harappan materials should be available in the contemporary sites in Turkmenisthan. The complete absence of Harappan materials at Mundigak, Shahri-i-shokta, Said Quila and Deh Marsai Ghundai which are geographically very close to Harappan territory seems to be very conspicuous. It appears, therefore that the volume of external trade and its subsequent role in socio-economic process in Harappan culture have been over emphasised.

But on the other hand, the uniformity of the Harappan material culture throughout its territory indicates an intensive and extensive internal interactive trade network which accounts for the growth and development of the Harappan socio-economic system. The discovery of Harappan materials in the mesolithic culture at Langhnaj, Adamgarh and Neolithic site at Burzahom indicate that the Harappans were involved in some kind of interactive trade with Mesolithic hunter—gatherers on the one hand and Neolithic Agro/Pastoral people of Burzahom on the other. Mesolithic hunter/gatherers of Langhnaj use to supply the Harappans raw materials for their production centre at Lothal and in exchange they procured finished products.

The Harappans had many production centres like Mohenjodaro, Lothal, Chanhudaro, Rohari etc. The products were distributed throughout its territory which must have been controlled and regulated by some kind of central administration, but the form and nature of which is still unkown to us.

Social Stratification

It is indeed true that the Harappan society was stratified, but the basis and form of this social stratification is not clear from archaeological records. B. B. Lal (1998), recently has suggested the prevalance of threefold society on the basis of town planning and made a general synthesis. On the basis of Kalibangan town-planning, he pro-

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posed that the lower town represents the residential area of richer section of people while the citadel area which is divided into two parts represent the residential areas of priest class and the working class. According to Lal, "The lower town with its well laid out houses, wide streets, rich yield of antiquities and protective wall was occupied by those who were fairly well to do, engaged in agriculture and trade. They seem to have provided the backnone to the entire settlement". He further concludes that these social groups letter gave rise to caste system.

The recently excavated site at Dholavira has revealed a three tier system of town planning (Ref. in B. B. Lal, 1998) namely the citadel, the middle town and the lower town. The lower town is divided again into two parts namely the castle and the Baily (courtyard) which are fortified within on overall fortification and North of this citadel the middle town in located. Between the citadel and the middle there lies the so called stadium. All these architectural units are integrated into a single by an inner fortification wall, while the so called lower town is located outside this fortified complex. The archaeological antiquities found from these complexes do not confirm the prevalence of different socio/political groups. Moreover if we accept the theory of B. B. Lal, then what was the relationship between the so called midle town and lower town ? All the Harappan citadels are generally located on higher elevated land (sometime artificially raised), and the so called lower town is generally located on the ground levels of adjoining regions. Since the major cities are all located on the flood prone areas of the Indus river, it is expected that the higher class who controls the administration and economy of the society would prefer their residential area in higher elevated land. Because besides other facilities, it also reflects the status symbol.

In fact, the evidences of Royal palace, Temple, Royal tomb etc. which stand for status symbols are practically nil. The Harappan burials so far excavated do not reveal any major social and economic differences between peoples. In fact, archaeological records do not help us to form an idea about the nature of social stratification of Harappan society.

Decline

The disintegration of Harappan society around 1750 B. C. gave rise to many theories, of which the flood theory advocated by Raikes and Dalas has been rejected in recent times. Besides changes in coastline, the drying up of river beds, mismanagement of resources, malaria and other diseases, climatic, tectonics, decay in administration, social disunity, etc. are some important major factors which are held responsible for the decay.

But to my mind, population increase coupled with diminishing food resources may be the major reason for the disintegration of the Harappan civilization. In the final stage of mature Harappa, the people started migrating to eastern and South/Eastern directions in search of better areas. Dalas has pointed out that at the final stage of Mohenjodaro the city had become an urban slum. Agrawal has estimated the population of Mohenjodaro at its final stage

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as 850,000 people. It appeas from the figure that the equillibrium balance was disturbed due to substantial increase of population and the result was shortage of food and subsequent dispersal of people to other areas.

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SOLAR SIGNS OF THE HARAPPAN PERIOD

Ajana Chaudhuri

It is justifiably expected that the people of the Harappan Civilisation had a notion of the Cardinal positions of the Sun along the ecliptic because these positions regulate the turn of the seasons at a place. A perfect foreknowledge of the onset of growing season was of vital importance for a huge agriculture-based economy like that of Indus Valley. So, it seems that not only the Harappans had a lunar calendar like other ancient cultures but also they developed a rudimentary form of solar calendar. This paper aims to find out the relevant astronomical pointers in the Harappan archaeological remains.

It seems that long before urbanisation started, the rudiments of astronomy existed in all ancient cultures for time-reckoning and season - determination. This is because the apparent diurnal revolution of the stars as well as the regularity of the phases of the moon provided man with most fundamental time-keeping devices. In any type of early human economy the knowledge of time-interval and that of seasonal changes were necessary and it was more so when the economy became agriculture-based. In that respect, the Harappan civilisation was not an exception.

This proto-historic civilisation flourished on huge agricultural surplus which could only be achieved by timely land - preparation, sowing, harvesting etc. Each step of their agricultural pursuits were climate-sensitive and hence they were keen observers of the sun's apparent annual movement because the Sun is the season - maker. Their methods were the measurement of the mid-day shadow of a vertical gnomon, the observation of heliacal rising and setting of bright stars near the ecliptic at the time of sunrise and sunset and the observation of Full Moons. These were the ancient astronomical methods followed generally by all the ancient civilizations. The two Solstitial Sun-shadows were the fundamental astronomical datum in ancient times to fix the agricultural schedule — as well as the yearly calendaric system.

The theriomorphic and anthropomorphic symbols of the Sidereal mark-points of the Sun's cardinal positions (*i.e.* two Solstices and two Equinoxes) are traceable in any ancient civilization where they were honoured as cult objects. As for example, seasonal flood of the river Nile in Egypt used to begin during the heliacal rising of the bright star Sirius (α–Canis Majoris)

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when the Orion was marking the Vernal Equinoctial position of the Sun. The Egyptians used to begin their civil year with the heliacal visibility of the star Sirius which was deified as the goddess Isis (Sothis) sister - consort of the God of Death Osiris *i.e.* Orion.

Possibly, the observation of the apparent North-South oscillation of the Sun between two solstices Winter and Summer, on any local horizon, commenced from the very beginning of Neolithic period and the Sun used to be represented by a cross of four equal arms enclosed in a small circle. Sometimes, sun used to be represented by two intersecting diagonals in a square seal. Such seals were discovered by archaeologists from Neolithic villages of the Indo - Iranian borderland areas and also from the Indus Valley area. The intersecting diagonals indicate the Solstitial Sunrise - Sunset points. In these tiny seals sometimes ibex with its head turned towards right or left is also depicted. Such a seal No. M272 A was recovered from DK area, Mohenjodaro by E. J. H. Mackay.[1]

In the *Ṛgveda* we get evidences that the method of contiguity and the method of opposability were utilised very often to demarcate the cardinal positions of the Sun as well as the onset of seasons. Traces of similar methods are also available in Harappan remains — from seals, cult objects etc. Needless to mention here, that science is a cumulative knowledge — it cannot grow all of a sudden. So, conjoint use of Harappan archaeological evidences and nearer literary evidences from *Ṛgveda* may reveal many items of truth.

In the first Mandala of *Ṛgveda* there is a hymn — where it is stated that *Ṛbhus* made four 'Camasas' of equal standard out of an original one made by the divine architect *Tvaṣṭṛ "akarta caturaḥ punaḥ"* (*ṚV* I 20.6) According to Yāska, *Ṛbhus* may be Sunrays or such persons who shine with sacred rite[2]. 'Camasa' is a square ritual vessel made of wood, and *Tvaṣṭṛ* (or the Sun) is its maker. Out of semantism of Vedic language one thing emerges from the *Ṛks* relating to *Ṛbhus* that some skilful wise persons divided the tropical year into four equal parts by four Cardinal positions of the Sun for the sake of food production and prosperity. This type of astronomical work without any telescopic and computational aids certainly required prolonged naked-eye observations over the centuries.

The indication of such division of a year can be seen in the tiny square seals recovered from Mohenjo-daro, Harappa, Chanhudaro and perhaps from other sites also. These tiny seals are of size ranging from 0.7´´ to 1.2´´ square inches and made of faience, steatite and terracotta. These seals show four equal divisions with cross marks at the centre or four circular solar motifs in each four compartments. Sometimes the four divisions contain three equidistant lines — horizontal as well as vertical. The sketches of several such seals, excavated from the lower levels of Harappa are shown in Fig. 1. Some of these seals show four equal divisions with three equidistant lines or ridges — perhaps indicating three months in each division.

In Sumer and Elam the Sun was depicted with a circle and a dot at the centre.

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This type of solar depiction is also present in the Indus Valley area usually arranged in a group of four in a square seal. Very rarely these tiny seals contain any legend. (One such four-sided seal has been described in detail in my previous paper mentioned under No. 11 in Notes and References).

The conceptual similarity between the Ṛgvedic literary evidence and the Harappan archaeological evidence of these square seals containing cross or circular solar motif, is indicative of the fact that the ancient agricultural communities perhaps tried to divide a tropical year by Equinoctial and Solstitial colures.

In Harappa a seal bearing an eagle and two serpents near its head was recovered by M. S. Vats[3]. The reverse side of the seal contains a cross. Mackay found such seals in Mohenjo-daro and Chanhu-daro[4]. It seems that both eagle and the cross were related to the Harappan Solar motif. It is to be noted here that Garuḍa — a mythical bird which is also serpent eater — is vāhana of Purāṇic Sungod Vishnu. The Sun is also conceived as a bird with beautiful wings — "Suparṇa" — in many *Ṛgvedic* hymns (vide *Ṛg* I. 164.46). In the Epic period "Suparṇo Garutmān" is formally identified with Garuḍa, the brother of Aruṇa — who is the mythical charioteer of Surya — the sun-god. So, there seems to exist an interlinked web of symbolic concepts and myths right from the Harappan period.

Out of these tiny square seals with cross at the centre excavated from the lower levels of Harappan sites the concept of the Svastikā signs materialised. This svastikā sign bears the testimony that the Harappan sky-watchers tried to correlate the apparent North-South movement of the Sun with its varying altitudes above the horizon. Perhaps this was a mnemonic device like a mathematical formula to keep in memory in a nutshell the recurrent astronomical phenomenon that during the Southward journey of the Sun from Summer Solstice the Sun will go down the sky day-by-day and during its Northward journey from the Winter Solstice it will go up in the sky day-by-day. The Svastikā sign may be visualized as a combination of two mechanical couples which have virtually imparted to it a constant rotary motion. This ingeniously constructed Harappan solar sign spread far and wide from Peru to China and was modified into many different forms. This Svastikā sign has also made a niche in the Indian iconographic tradition and has been accepted as an auspicious symbol.

The urban-planning of Mohenjo-daro also bears the evidence of their solar observations as well as climate - consciousness. The Indus Valley area including lower Sindh and Kutch was under the monsoonal sweep from about 8000 B. C. to 2000 B. C. at least. The Harappan culture flourished during a time of reliable and good monsoon rain besides usual winter rainfall due to western disturbances. The prevailing surface winds in this area during monsoon are generally south-westerlies to easterlies and besides that there is inflow of sea-breeze in the north-south direction. The laying out of the straight east-west and north-south roads in the urban complex of Mohenjo-daro shows their keen weather-consciousness and also

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reveals their method of Solstice — Equinox observation. The star Thuban (∝-Draconis) which was the then pole star is not a bright star and it is much easier to take recourse to the solar observation to lay out their north-south streets than to the stellar observation of the north pole star. Such solar observation was adopted usually in other ancient countries too. A simple illustration (Fig. 2) will help to clear the probable method adopted by the Harappans. In the figure 2, A denotes the northernmost sunrise point on the eastern horizon and B, the southernmost sunrise point. In the Northern Hemisphere A corresponds to the Summer Solstitial position of the Sun and B the Winter Solstitial position after six months. The corresponding Sunset points are C and D on the western horizon. The lines joining A and D again B and C intersect at O, O is the point of observation. The common bisector of these equal and opposite angles at O will reach the mid-point of AB and CD at E and W respectively. EW is the East-West line. On the Equinox days the Sun rises at E and sets at W. A line at right angle to this East-West line is the North-South (NS) line. This can be done by gnomon also or by erecting some poles aligning with the Sunrise - Sunset points on the distant horizon. The oblique lines AC and BD were once used by the ancients to represent the Sun. A square formed by ABCD was also used as a symbol of the Sun in Assyrian old cuneiform language. The two addorsed - *triśul* — type figure formed by such method of observation was used by the Harappan people to create another set of Sun - symbol (1) and (2) of Figure 2(a). Many scholars say these are Sun-wheels and six lines inside are spokes of the wheel marking six seasons. But it is to be recalled here that Harappan wheels were solid, made of tripartite wooden blocks having no spokes. Moreover they had only three seasons and not six. The graphic similarity between the solar signs and the geometrical layout for finding East-West line (as shown in Fig. 2) is striking and cannot be ignored.

Regarding the sign (2) of Fig. 2a — in the form of an eye I like to present an interesting point.

The Anyang Oracle-bone inscriptions in China — corresponding to the Shang dynasty of the mid-second millennium B. C. had a very similar Chinese ideogram (*vide* : Fig. 2(b). That Chinese ideogram is a combination of two pictograms a tree and a Sun-symbol. The combined traditional meaning is the East Sun seen through tree. The Oracle bones were employed as a method of divination in ancient China and the earliest characters of the Chinese language first appeared on these Oracle-bone records. The modified form of this composite ideogram still exists in the modern Chinese language meaning East. In this connection Prof. Joseph Needham's remarks in his monumental work "The Science and Civilisation in China" is worth mentioning[5]. He expressed his doubt regarding this ideogram for the Sun.

> "...the rising sun seen through a tree — but rather a sack or bundle. ...Unless the word is purely a borrowed homophone, it is curious that an azimuthal direction should be connected with a bundle."

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Prof. Needham expresses his doubt on the 'traditional explanation" of this particular Oracle-bone ideogram — possibly due to the fact that the archaic Chinese pictogram for the Sun is a circle with a dot at the centre. Obviously, a circle resembles real sun more closely than a "bundle-shaped" or rather an eye-shaped symbol with several intersecting lines drawn inside it. Moreover, the Sun is depicted as a circle with a dot at its centre in the ancient Egypt and Mesopotamia. Due to all these reasons, Prof. Needham thinks that the symbol must be a "borrowed homophone" and there must be some cosmic relevance attached with the internal lines as well as for the "bundle-shaped" enclosure — somewhat in accordance with the later Taoist expression of heaven as "Blue Bag" and "perhaps the equator and the ecliptic were the cords which tied up the bag".

The significance of the internal lines drawn inside the circular or eye-shaped enclosure of the two Indus signs has already been explained above. Neither do they represent spokes of a wheel nor the cords of ecliptic and equator to bind up the heaven's "Blue Bag". They represent the lines to determine the true East-West direction (Prāci) at a place and the end-points of the intersecting lines are oriented towards the Solstitial and Equinoctial Sunrise-Sunset positions of the Sun as seen on a distant horizon of a place. The unique structural similarity of the Chinese Ideogram with the Indus Solar sign (2) along with its ideographic meaning — "East Sun seen through tree" may provide us with a starting point to probe into the enigmatic Indus Script.

The phonetic values of the Chinese as well as of the Indus ideogram are not yet known to me. Moreover, it is to be ascertained now by other analyses whether the Indus eye-shaped solar sign (2) stands for vernal sun only or for the rising sun of any day and whether the circular solar symbol (1) stands for the Summer Solstitial High Sun. In the Indian iconography a Solar-wheel is traditionally accepted as the royal insignia for supreme power — divine or human. In *Ṛgveda* many hymns descirbe the sun as the eye of the sky, eye of *Agni* etc. (vide *Ṛg* I. 35-8, *Ṛg* I. 115.1 etc.). The intersecting lines inside this Solar Symbol which look like two addorsed *triśuls* have been treated as *Viṣva-Vajra* symbol in the Indian iconography. The detailed discussion of the evolution of these iconographic element is not within the scope of this article but it is clearly seen that when important Harappan ideograms and symbols ceased to exist in general use in later periods they were transformed into traditional religious symbol like *Swastikā* or some iconic sign like *Vajra* symbol.

It is known that the Harappan trade and commerce was not restricted within its geographical limits. It extended into Central Asia also, possibly before the Mature Harappan period. The Altindepe civilisation of Turkmenia (*ca.* 2300 - 1900 B.C.) had some close cultural links with the Harappan civilisation. Though the full picture of this Central Asian trade with all its trade-routes, cultural exchanges etc., is yet to be worked out — it can generally be assumed that these two vast areas of the ancient world — Indus Valley and Central Asia did not re-

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main in complete mutual isolation. They were interacting closely with each other through ages and Central Asia may be taken as a cross-road of many cultures. Considering from this point it seems therefore, that there was some filtering of cultural traits from the prosperous Harappan civilization of millennial duration to the Northern China too where the Shang Culture came up during the mid-second millennium B. C.

We know that the seasons of a place largely depend on the apparent positions of the Sun in the sky. Only three Cardinal positions out of four — two Solstices and the Vernal Equinox mainly regulate the regional climatology of the North-Western part of this sub-continet. The Winter Solstice indicates the end of bitter cold, Vernal Equinox the summer and the Summer Solstice brings a great relief from the scorching sun by ushering in monsoon rains. During winter this area gets frequent rains due to Western disturbances and hence the inhabitants of this area recognise three seasons only — winter, summer and rainy season — four months each. This four monthly division of a year spanning over twelve months perhaps gave rise to four monthly sacrifices in the Vedic period *(Caturmāsyayajña)*. Harappans also divided their tropical year into three seasons, (archaeological evidences in support of this point will be dealt with in another article).

With the notion of these three seasons based on three Cardinal positions of the Sun Harappans prepared an anthropomorphic sun symbol. The icon has three faces — perfectly symmetrical about a central line and surrounded by six animals arranged in the pattern of a loop of the numeral eight. This well-known seal has been named by Sir John Marshall as Proto-śiva seal[6] or Paśupati seal (M=420) but the seal has no connection with the Purāṇic Śiva whose *vāhana* is bull. And that bull is conspicuously absent here. I have discussed this seal in detail in my earlier paper in 1992.[11] The paper came out in the Journal of the Asiatic Society, Calcutta. So I am giving here the salient points only—

1. The two profiles of the icon represent two Solstitial positions of the Sun — the deity's right one for Summer Solstice and the left one for the Winter Solstice. The central face represents vernal Sun.

Here, I like to mention a few relevant points from *Ṛgvedā*. The Ṛgvedic Sun God Vishnu traverses this universe with three great strides (*trīni padā vicakrame* — ṚVI 22.18). He planted his third step at the source of water *i.e.* Summer Solstice (*Viṣnoḥ pade parame madhava utsaḥ*)[7], Summer Solstice being the gateway of *Dakṣināyana*, when rain comes. Again, the god Surya rides on a one-wheeled chariot which has twelve spokes and three navels and on the continuous rotation of this wheel life depends[8]. The Agni another form of Surya has three heads (*tri murdhā*)[9] etc. There is always an emphasis on three. The earlier part of *Ṛgveda* speaks of three seasons (vide : *Ṛg* I. 15.4, I.164.48, V 47.4) and then the Vedic people switched over to six. This indicates that the conceptual framework of the Harappan period regarding the division of

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seasons was taken up by Ṛgvedic priests also.

2. Now, the 2nd point of the seal is the Central figure, — with its sitting posture and ornamentation it is perfectly symmetrical around a central line dividing the deity's body into two equal parts. The conception of this symmetry is in conformity with the idea of *Viṣuvan* day (*i.e.*, Vernal Equinox day) of the ancient Indian astronomy. It is that day which divides the year into two equal halves and when the durations of the day and night are equal. In the Aitareya Brāhmaṇa Viṣuvan day is described as a symmetrical sitting figure of *'puruṣa'* having left and right arms of equal length[10].

3. Two standing deer underneath the throne symbolise two ayanas — *Uttarāyana* and *Dakṣināyana*. The right one indicates the northerly passage and the left one southerly passage of the Sun. The deer are placed in a like manner but with their heads turned hundred and eighty degrees opposite to each other. Similar seals with deer are available in the Harappan repertoire.

4. Now, the 4th point exposes the hidden significance of the seal. Each of the six animal figures possesses definite directional aspect. The jumping tiger symbolises the swiftly ascending vernal Sun. The symbolic correlation between the ferocity of the yellow tiger and the blazing summer heat of the High Sun is remarkable. The thick skinned Rhino is there high up in the sky to assist the Sun to tide over the Solstitial crisis.

When the Sun reaches Summer Solstice, gnomon's mid-day shadow will be the least and no appreciable change is discernible at least for seven days. This apparantly motionless Sun with its terrifying heat really creates a fearful situation — until it proceeds to the South and rains come. Among Aztecs this fear that the Sun might stop at the Summer Solstice took the terrible form of mass human sacrifice. There are several allegories in *Ṛgveda* too in this respect.

The guardian of the Summer Solstice is elephant. This water-loving, intelligent and powerful animal is a symbol of rain-bearing thunder cloud of monsoon in the Indian mythology and is considered as an auspicious symbol in the Indian iconography as the vāhana of Indra (in the Puranic period). The Ṛgvedic supreme god Indra is no other than the personified Summer Solstice *i.e.* when the sun takes its apparent highest position in the sky during mid-summer of the northern hemisphere. The Buffalo at the Winter Solstice is also a powerful animal and in the Indian mythology it is the vāhana of Yama — the lord of the South *i.e.* the *pitṛloka*.

The Harappans have selected these strong animals to protect the three cardinal positions of the Sun because animals habitually always mark their territories and defend the same from intruders. Their behavioural characteristics were known to the Harappans — because they were once the hunter-gatherers of the same locality. These animal-protectors became their icons. The directional aspects of the seal will be revealed if we replace the animals by arrowheads only—and follow the sequence from tiger — rhino — elephant — buffalo

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through deity. If we complete the loop with two dear underneath, we will get an Analemma figure of astronomy—an assymmetric figure of eight (Fig. 3). If we follow a spot of midday Sunlight throughout a tropical year on the floor of a dark room we will get such loop of figure of eight with its longer axis along the North-South line. This is the proto-science of the proto-Śiva seal. Did the Harappans observe, such loop-like figure ? I am waiting for some other corroborative archaeological evidence. In the meantime I have noticed an interesting story in the biography of Apollonius written by Philostratus. This Greek Philosopher came to visit Taxila towards the close of the first-half of the 1st century A.D. with a fellow-traveller named Damis. The Indian King of Taxila invited them to dinner. A few lines from Dami's memo is being quoted here[12]—

> "The table was ...full of fish, birds, goats and sows ...and with tiger loins — the only part of the tiger they eat and this, because, they suppose that at its birth it raises its forepaws to *the rising sun*".
>
> (Italics mine)

As the legend of the seal is still shrouded in mystery this old folk-belief may provide some clue to identify the seal over and above my explanation given above.

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INDUS VALLEY—WAS IT THE CRADLE OF INDIAN ASTRONOMY

Ramatosh Sarkar

Astronomy, according to all historians of science, is one of the oldest branches of science, may be the very oldest. Foolproof, direct evidence cannot be expected by way of support for such assertions; but indirect circumstantial proof is certainly there, and there is sound convincing logic behind the conclusions.

Indian civilization is one of the oldest in the world, one may say. Indubitable proof relating to this fact can be found in the relics that have been unearthed during the past about one hundred years or so in the archaeological sites that lie in the Indus valley and other places thereabout. And proof was there available earlier embodied in Vedic literature.

Now there are two antiquities— astronomy on the one hand and Indian civilization on the other. How to relate them?

Here is an attempt to suggest how.

But before we get into it, let us make a small digression. Let us recall the strange attitude of some scholars, old and recent. They have almost taken it for granted, without bothering to state why, India could have no astronomy worth the name before it learnt things from Greece or some such place.

Dreyer in his celebrated history of astronomy (first published in 1905 and then published again after revision in 1952) writes almost at the beginning of a chapter entitled *"Oriental Astronomers"*. "...it is beyond a doubt that Indian astronomy is the offspring of Alexandrian science." A few lines later he dates astronomy as a science in India to around the third century A.D. Another noted historian of astronomy of recent years Nengebaner says, about what he refers to as Hindu astronomy, "There can be little doubt that the original impetus came from Hellenistic astronomy..." But oddly, though it may seem, the same writer, a little earlier, referred to Hindu science as "an enormous field which still awaits systematic research..."

And now for our own efforts to search for the truth of the matters.

In recent years two lines of independent research relating to two apparently different fields of study have come out with some findings that seem to suggest where and when Indian astronomy might have started sprouting and developing.

One of these lines of research was undertaken in our own country by Sarkar, who was included in a team that was formed by

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the late lamented philosopher and historian of science, Debiprasad Chattopadhyaya in the 1980's. The idea was to compose a really comprehensive treatise based on new study and research. In the first volume of that treatise, *History of Science and Technology in Ancient India - The Beginnings*, Sarkar's findings have been reported in *extenso* in signed articles appended at the end of the book.

The other line of research had been undertaken about two decades earlier in Europe—in Finland, U.S.S.R. that was in existence then and some other countries. The leading man in this line of research was Asko Parpola of the University of Helsinki. They were trying afresh to decipher what is known as the Indus script—one of the two ancient scripts that had defied all previous attempts to deciper.

Some astronomical statements in Vedic literature : their plausible interpretations and analytical implications

(i) *Krittika* rising in the east.

In *Satapatha Brahmana*, a composition belonging to Vedic literature, there is a rather enigmatic statement made about pleiades. Pleiades, as is rather well-known, is a flock of stars-or a 'star-cluster' as astronomers would prefer to say in their parlance. There are in reality hundreds of stars there in that particular star-cluster visible through a telescope, but ordinarily a person can spot six—may be a few more if he is possessed of very keen eye-sight. Its Indian name is *krittika* and that is how *Satapatha Brahmana* refers to it, needless to say.

In some context, trying to recommend it for some ritualistic purpose, *S.B.* enumerates its distinctive features and says that *krittika* rises in the east. That is apparently funny. For, anything in the sky, that rises at all, rises in the east. In other words, unless it is 'circumpolar'-like, for instance, the pole Star or *dhruvatara* for which there is neither the phenomenon of rising nor of setting—a star has to rise in the east only and nowhere else. So what does *S.B.* mean to say—to say the obvious? Perhaps not. It must have, in its cryptic style, meant to say something special—but in an imprecise way. By *caso* it must have implied the 'east-point' which is a precise point on the eastern horizon—where, by way of elucidation it may be mentioned, the sun-rise takes place on 21st March and 23rd September and not on other days, though it may be said to rise everyday in the east. That makes sense. Unless we decide to set aside the statement of *S.B.* as something trivial, by east the east-point must have been meant. But though that would impart some meaning of substance to the statement, it would not make it a true, factually correct statement straightaway. *krittika*, as one can easily verify these days, does not rise in the east-point. Then? Back to square one-or something even worse? *S.B.* made a statement that is evidently false? But—no. The astronomical phenomenon of 'procession of the equinoxes' may be invoked and that can be real. Some systematic change is taking place in the starry set-up that is very slow but steady. The rate is slightly variable but there is a mean value. Applying that mean value calculation has been made and it turns out

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that *krittika*, though it does not in the restricted specific sense of the term—rise in the east now-a-days, would indeed rise there some time in the past. That was 2334 B.C.—or may be just sometime earlier. So, around that time *krittika*'s rising in the east was factually true and that imparted some distinction to *krittika*, as claimed by *S.B.*

So far, so good. But a question immediately rears its head. Does the time supplied by astronomical calculations square up with history? Vedic literature—even the oldest part of it—is considered by eminent scholars to have been composed in the second millenium B.C.—not earlier, taking into account all aspects of the matter into due consideration, with an open mind.

Herein appears a historical dilemma

(ii) Length of the longest day-time.

Let us now consider another part of Vedic literature a composition referred to as "*Vedanga Jyotisha*".

Everybody knows daytime and night time are of unequal durations in the course of a year. In the northern hemisphere in summar, day is longer than night—being the longest on the day of 'northern solstice', which according to our modern calendar falls on June 22. On that day, daytime is certainly the longest in every place in the northern hemisphere, but the measure of the longest day is not the same everywhere. It depends on the latitude of the place. In Calcutta with a latitude of about 22.5° N, the longest daytime measures about 14 hours-night time, consequently measuring about 10 hours. London, having a latitude of about 51.5°N, experiences about 16 hours of daytime. And similar dependence is there for other places.

Now the author of *V. J.* seems to be aware of this fact of astronomical origin only in part. At least about the other part he has kept mum. He says, using the unit of time '*mūhurta*'—that was in vogue then and that equals $^4/_5$ of our unit of hour *i.e.* 48 minutes—that the longest daytime can be as long as 18 *mūhurtas*. He does not specify the place—obviously because he does not know about the dependence. But we can make the computation using necessary astronomical knowledge. It has been done, keeping in mind that 18 *mūhurtas* in our present day units amount to 14.4 hours.

If we take a simplistic view, calculation yields a latitude of about 35.66° N which is quite higher up than India on the globe. But this simplistic view is objectionable to any student of history of astronomy. Some sources of error are there, and consequently some corrective measures are called for. They are known to modern astronomers but were not known in the days of antiquity.

What is called 'atmospheric refrection' is one such source of error. Because of this the sun appears to have risen above the eastern horizon before it actually does, and is visible for some time in the west even after it has actually set. As a result, daytime falsely gets lengthened. Correction for this error gives a latitude a little lower—about 34.5°.

Again the sun not being a point of source of light like a star of the night-sky, the meaning of sun-rise or sun-set lacks precision. Which part or parts of the solar disc

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must rise or set so as to make it meaningful ? Allowance has been given for this anomally also and calculation is accordingly made. That brings the latitude down a little more to about 34°.

There is a third aspect to take into consideration : the elevation of the ground from where the rising or the setting is being observed. Correction for that is called 'dip correction'. Such corrections have been made, assuming some heights above the sea-level at random in an ascending order—*viz.*, 300, 600, 1050, 1500, 2250, 3000, 4500, 6000 and 9000 ft. The corresponding latitudes are in a descending order but the lowest one measures, 30. 7° N.

Before we conclude this part of the discourse, which embodies some research-work of Sarkar, let us note in passing that the latitude of Harappa measures about 31° N.

A new plausible interpretation of Indus valley writings.

As is rather well-known to people interested in prehistoric studies, the script that was used to convey their messages by the people living in the Indus valley, in and around the third millenium B.C., has stubbornly defied all attempts to decipher it. The situation is bad still but since sometime in the 1960s, *i.e.* after the passage of about half a century, a new line of attack seems to be promising and, from the point of view of archaeoastronomy, the results that the line has yielded so far seem to have some special significance.

The new team of researchers—Asko Parpola *etal* made two departures from the earlier efforts. First, they took photographs of all available seals etc. bearing inscriptions on them and subjected them to computer analysis. Secondly, they hypothesized that the language in the Indus Valley was akin to Tamil rather than Sanskrit, as distinct from the hypothesis of other researchers—Tamil and Sanskrit, be it recalled here, are two languages that are poles apart, so to say, in the Indian linguistic scenerio.

According to these researchers, the Indus script was not alphabetical. Rather it was pictographic. Furthermore, it would, out of incapability, resort to 'rebus writing'—*i.e.* it would, if need be, use, one word to mean another which happens to be its 'homonym' or 'homophone'.

In case some one happens to be unfamiliar with the technical terms just now used but is interested in Indological studies, some concrete, specific examples will help. Let us take some words of the English language. The word 'calf'—is used to mean some different things altogether. It may mean, 'a Goung bovine animal'. It may also mean 'the fleshy hind part of the human leg'. So the word 'calf' may be labelled as a 'homonym'. But the words 'sun' and 'son' are 'homophones'. They sound alike but have totally different meanings and spellings. As to 'rebus' writing, it by means of a drawing that really suggests the 'sun' - *i.e.* the object in the sky—the writer wants to imply 'son' *i.e.* a male child—then he has resorted to 'rebus writing'.

Now to come back to the Indus valley, in a large number of inscriptions there, there

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is a symbol that immediately suggests the fish. It is often referred to as the 'fish-sign' by epigraphists. According to Parpola and others, that sign means the Tamil word of 'meen'. In Sanskrit, the all too familiar vertebrate, cold-blooded aquatic animal is denoted by *matsya* and also by some other synonymum words, one of which is "meen".It so happens that the word "meen" belongs to the language of Tamil also. Probably it is from Tamil that the word infiltrated into Sanskrit, as the two classical languages were coexisting in the Indian subcontinent side by side for a long time—and are, incidentally, still doing. But in Tamil, the word "meen" is a homonym, meaning either a 'fish' or also a 'star'—yes, a star of the night-sky. According to Parpola etal in the Indus writings, by drawing a fish and word 'meen' is meant but in the other sense. In other words, the so-called 'fish-sign' have denotes the celestial object—not the aquatic animal. This idea, put forward by these scholars, is not just a fanciful idea. It has some substantial basis.

In each case, the fish sign is accompanied by some other signs. Quite often thene are some strokes—three or six or seven. The strokes most probably stood for the corresponding numbers. So the message that was being conveyed probably could have been 'mum meen', if the strokes were three—'mum' meaning three in Tamil. And in the real sky, at one place, three stars are there close to one another. According to Indian astronomy, that is what is called a "*nakshatra*"—there being altogether—27 such, situated on the lunar path across the sky as it revolves round the earth. This particular *nakshatra* has been given the name of mrigasira. In Tamil, its name in "mum meen", the expression suggested by Perpola. As to six strokes, it should denote "aru meen, which in fact in Tamilic equivalent of *krittika*, the *nakshatra* that has been referred to earlier in this discourse, in connection with its rising in the east. If the strokes are seven, the meaning could have been "*saptarshi mandal*".

There are several other important observations that may be made here in the same vein. But the most important observation has already been made. This suggests that the important characteristic feature of Indian astronomy took shape in the Indus valley in the third millenium B.C. or thereabouts—the '*nakshatra*' system. It conceives of the whole sky as encircled by a belt—like region stretching from the west to the east and divided into 2.7 parts. Each such part is a '*nakshatra*' or a lunar mansion that houses the moon for one full lunar day or '*tithi*'. Depending on where the moon attains fullness—*i.e.* where '*purnima*' takes place—the month is named. The *nakshatras* are *aswini, bharani, krittika, rohini, mrigasira* etc. If the full-moon takes place in *aswini*, the month is *Aaswin*, if in *krittika*, the month is *Kartik*; if in *mrigasira*, the month is *margasirsha* which is how our month of *agrahayana* would be referred to in ancient India.

So, according to the reading suggested by Parpola and his school, the lunar calendar, one important feature of Indian astronomy—good, bad or whatever it may be termed, but certainly an important characteristic feature—originated in the Indus valley.

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The seals of the Indus valley, perhaps all archaeologists agree, were used by the people there as we use rubber-stamps etc. today—as mark of identification or authorisation, they would be put outside packages etc. And the month—whether it was *kartik* or *agrahayana* or some other month—would be notified, along with other things perhaps. That is as per the interpretation of Parpola and his co-researchers.

There are many other things suggested by these scholars that some symbols indicate planets one particular juxtaposition denotes the pole star or *'dhruvatara'*. They are being interesting and seem very plausible. But they do not help conclusively to establish this mode of decipherment. They seem corroborative, if the original idea is accepted or conceded.

Conclusion

There is a high probability or a strong suggestion that the roots of Indian astronomy are to be looked for not in Vedic literature but in the relics of the Indus valley.

As per the findings of Sarkar, some astronomical observations of Vedic literature could be true in 2334 B.C. or some such time, and some in a place like Harappa or immediately thereabout. These conclusions based on rigorous mathematical calculations perhaps do not go hand in hand with the historical and geographical framework that is associated by Indological scholars with the Vedic people. These people, then, seem to have borrowed astronomical information. From where? The Indus valley people have a reasonable claim to be the creditors, as per the research-work of people like Parpola.

More research is certainly called for. But *prima facie* it seems that the Indus valley was the cradle of Indian astronomy.

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A STUDY OF HARAPPAN SKELETONS

P. Gupta

The Anthropological Survey of India is the biggest store house of ancient human skeletal remains in India. These materials are under constant preservation and maintenance by the anthropologists of the Anthropological Survey of India. Almost all the skeletal series recovered from the archaeological sites in India have been reported upon by the scientists of the Anthropological Survey of India from time to time.

Material

Of all the cemeteries associated with Indus Valley Civilization the cemetery at Harappa is the most interesting. The sites yielding bones are as follows: (a) cemetery H stratum I Jar burials (b) cem. H St II-open burials (c) Mound AB, F & Area J (d) Area 289 & (e) cemetery R 37.

In later period of Harappan Civilization in cemetery H two strata of burials early and late cemeteries are characterised by their own method of burial. It was earth burial in the Early cemetery H and hot burial in the late. In the former complete bodies were laid in extended position in the eastern section, while fractional burials were found in the western. In the late cemetery H disarticulated bones evidently collected after exposure of the bodies, were placed without any order at the bottom of jars, too small to accommodate complete embryonic position. The people of H had a different culture from those of true Harappan cultures.

Regularly disposed skeletons were excavated in square R S 7 with typically Harappan pottery as grave furniture. Another mound named Area a yielded true Harappan pottery and a group of Human remains found tightly hacked together. Disposal by regular burials are therefore ruled out. Mound Area AB yielded a few skeletal remains.

Of true Harappan culture, cemetery R 37 yielded the largest no of individuals *i.e.* 108 Area G 27, and 25 came from mound areas. The remains of 78 individuals were recovered from jar burials in cem H I and 26 from open burial in cem. H II. Altogether remains of 260 individuals comprising 75 adult males, 92 adult females and 56 non-adults were recorded, sex of the rest could not be determined.

Results

(a) The estimated statue of R 37 people shows that they were somewhat latter than those of cem.H.

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(b) The skulls from 37 are distinguishable from those of H by comparatively small cranial capacity of the former. The aircomference of both is not very different and therefore indicates some difference in cranial height.

(c) While the length of R 37 skulls is not very different from H; the head of the former is distinctly narrower, head height is less and upper face is slightly narrower.

(d) Cranial index of R 37 is lower than that of H. This implies that people of R 37 were more long-headed and had narrow faces than those of cem H. What is significant a few round headed skulls were present in cem. H. (I+II) while round head is completely absent in R 37. From this point of view the population of R 37 appears to be more homogenous than cem. H.

Discussion

The above observations leads to two problems : a) were the people of R 37 and H genetically related to one another? (b) Did the people of H replace the earlier population of R 37, or do they represent a somewhat differentiated group which lived socially separated from the rest and thus probably maintained their difference till later times?

As far as the present evidence goes, there is no positive clue to suggest that the population of R 37 was subjected to heavy intermixture which might have brought about drastic changes in their head shape. This is in spite of sharp cultural difference between R 37 and Cem. H.

Harappan culture was fairly wide spread in north and north western India. If samples were available from all the discovered sites it would have given us some idea about the regional differences of the population in that quarter of India in the past; but the available materials are mainly from Rupar, Harappa, Mohenjodaro, Lothal, Kalibangan. It is interesting that the Harappan population of Mohenjodaro has similarities with present day long headed population of Sind. The same relationship holds good between ancient Harappa people and the present Punjab population. The skulls from Lothal are on average round headed. This is very close to present population of Gujarat. Incidentally, it may be mentioned that the occurrence of round head people of Lothal in the Harappan age cuts accross Ristujs hypothesis that brachy-cephalization of Gujarat and Maharashtra was one to Scythian invasion of India during the 1st and 2nd century A. D.

It appears striking that the differentiation in regard to C. I. observed in the Harappan age is so remarkably similar to the differentiation in the present day population in the corresponding areas. The implication is that the population in this wide spread region of India has remained more or less stable since Harappan times to the present day.

Such stability is perhaps comparable only to the population of Egypt which seems to have persisted over 4 or 5 millenia or more in the same manner as of Harappa. In other parts of the world, marked changes of culture have sometimes been the result of invasion by people bearing other physical

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characteristics so that culture change has been accompanied by changes in physical characters also. But in the case of Harappa, although cultural change is marked, yet it does not seem to have been the result of large scale invasion; the physical types remaining, more or less, constant. Therefore it may be suggested that even if there were invasion the number of invaders must have been too small to bring about marked changes in physical characters or that most of the changes were due to cultural forces of internal origin.

Considering the relationship between cultures and stratigraphy of samples involved at the Harappan cemeteries we may say that all the materials combined together, clear homogeniety is observed in internal consistency as shown statistically.

Finally while evaluating relationship with the people of the Near East, comparable in time and culture, it is seen that there is no real difference statistically between Harappan of Tepe Hissar population (Iran) and there was a close similarity between them.

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HARAPPAN COLLECTIONS IN THE MUSEUMS OF CALCUTTA

Samir Kumar Mukherjee

The historic discovery of Harappa and subsequently Mohenjodaro brought significant changes in the traditional concepts about Indian history. The sensational discoveries in the early twenties of this century pushed back the antiquity of the country to third millenium B. C. and the civilization of the country was set at par with other contemporary great civilizations of the world. In the language of Sir John Marshall the Director General of Archaeology in India, who was at the helm of archaeological affairs at that time "at a single bound we have taken back our knowledge of Indian civilization some 3000 years earlier and have established the fact that in the third millenium before Christ or even before that the peoples of Punjab and Sind were living in well built cities and were in possession of a relatively mature culture with a high standard of art and craftsmanship and a developed system of pictographic writing."

The excavations at the two above major cities were undertaken between the years 1924-31. As a result of the startling discoveries at the twin cities and resultant discoveries of more and more Harappan sites by the efforts of D. R. Sahni, R. D. Banerjee, Sir John Marshall, N. G. Majumder, Sir Aurel Steins, Earnest Mackey and others our knowledge about the nature and character of pre-Harappan, Harappan, comtemporary Harappan and post-Harappan cultures has widened considerably. Archaeology that was flowing at a low ebb till 1920 and suffered a set back on account of the recommendation of the Indian Retrenchment Committee suddenly made a phenomenal progress. The entire attitude of the British Government towards Indian archaeology was changed. As a consequence, in 1925-26, the grant for exploration was increased and a seperate Branch dealing exclusively with exploration was established with a Dy. Director General and three Asstt. Superintendents (one of them later designated as Special Officer) in 1926-27.

Museums having collection

As a part of the Government policy, the rich crop of antiquities recovered from these sites were distributed among the premier government-run museums of the country. The Archaeological Section of the Indian Museum, Calcutta under the ASI received a substantial number of antiquities from various archaeological sites of Sind, Punjab, and Baluchistan as a loan from the Director General of Archaeology, Government of India. The collections are from Harappa, Mohenjodara, Chanhudaro, Nal, Zhob, Nundra,

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Shahi Tump, Amri, Jhukar, Jhangarh, Ghazi Shah, Makran coast. The years of acquisition of the collections range between 1924 and 1938. It is to be noted that after the outbreak of the Second World War when this Building was taken over by the military as a Camp Office in 1939 no antiquity has been sent to this museum. The volume of collection here is enormous and includes seals and sealings, copper and bronze weapons and tools; painted and plain wares; terracotta human, animal figurines, toys; variety of beads made out of precious stones; shell terracotta and faience made bangles; stone weights; chalcolithic long blades and ores. Many of us present here may recollect the days when the 'Prehistory and Proto-history Gallery' located on the ground floor of the Museum Building in the Southern Wing having an entrance either through the 'Marble Staircase' on the Jawarlal Nehru Road (Formerly known as Chowringhee Road) or through the Gandhara Gallery formed a prestigious part of the Archaeology Section of the Museum. Here at that time on the one half were exhibited pre-historic and in other antiquities of proto-historic and historic ages from India and other countries. The selective and representative objects from these sites were displayed in table show-cases as well as on wall show-cases having maps, charts on the wall to supplement a variety of information on the themes. The display pattern with table show-cases remind us of similar display method followed in the Archaeological Museum, Taxila founded by Marshall in 1928.

The Chinese aggression against India in 1962 necessitated hand-over of the portion to the Civil Defence at a short notice. As a result of the declaration of emergency in the country, the gallery was dismantled on a war footing. Entire collection along with show-cases were removed to the reserve, causing a problem in keeping the valuable collections in the museum premises. Although the other galleries devoted to sculptural arts remained undisturbed, only the Pre and Proto historic gallery was closed, thereby depriving visitors to see the rich heritage of Chalcolithic culture particularly of the Harappan period.

After the restoration of normalcy, the Archaeology Section till under the custody of the Museums Branch, ASI came under the control of the Board of Trustees, Indian Museum in 1965 along with the staff members. After this integration, Indian Museum, again reopened the pre and proto-historic Gallery in the eastern wing on the ground floor in the mid-seventies. It is needless to say that students particularly belonging to the secondary and higher secondary levels as well as students of graduate levels with history as their subject, who are familiar with the Harappan culture from their text books are amply benefitted by studying the rich repository of the Harappan collections in the museum. These antiquities particularly attract them most.

Very recently an international exhibition was organised by the Indian Museum in collaboration with ASI in South Korea entitled Yogi & the Buddha "Glimpses of the Indus valley Civilization and the life of Buddha" from September to November, 1998. A representative collection from the Harappan sites, numbering 48, on loan from

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ASI was sent to Seoul. The sites include Surkotadah, Bhagabanpura, Banawali, Manda, Kalibangan and Dholavira. It is gratifying to learn that the above objects on return from abroad have been given on a temporary loan to the Indian Museum by the ASI. It is of considerable interest that the exhibits highlight the recent discoveries from the Harappan sites in the Post-Independent period.

Another notable museum in Calcutta that possesses a fair number of Harappan antiquities is the Asutosh Museum of Indian Art, Calcutta University. The museum was established under prof. D. P. Ghosh in 1937 only with five antiquarian remains. The museum is a pioneer in many respects. This was not only the first University museum in India but it was the first university in India to receive a licence from ASI to excavate Bangarh in Dinajpur an early historical site between 1937 to 41. Prof. Ghosh, the founder Curator, who had enough farsight and imagination, took the opportunity of the liberal attitude of the ASI that advocated widespread extension of archaeological researches from the confines of a mere official organization to the academic activities of learned societies, Universities and even to foreign institutions. Besides collecting objects through exploration and excavation, Prof. Ghosh was equally concerned to enrich the collection through gifts and exchanges. Under his initiative, Sri C. R. Roychoudhury, Asstt. Curator of the museum collected a few painted sherds, perforated jar, terracotta and shell bangles, terracotta cake, ball, bulls, rings, beads etc. from Kalibangan where he was deputed by Sri Ghosh. Although the collection is limited, these is no doubt the post-graduate students of archaeology, AIHC and museology are amply benefitted by the actual specimens while studying the Harappan culture.

The other museum in Calcutta that possesses a handful of Harappan antiquities is the museum attached to the Department of Archaeology, Calcutta University founded sometime in 1968. The collection consisting of fragmentary potteries of both plain and painted and plain wares, perforated jar, terra-cotta cake, etc. was donated to this Department by the present speaker. I received the objects from the personal collection of M. M. Sengupta, Photographer of the Archaeology Section, Indian Museum. Sengupta accompanied N. G. Majumder to many of his field trips during the field seasons of 1929-30 and 1930-31. He was also in the company of Majumder during his last exploratory trip to the foothills of the Kirthar Range at Rohel-jo-Kund along with Krishnadeva, Arabinda Chatterjee, Draftsman in November 1938. All of us know that in this trip on November 11, 1938 Majumder was killed by a band of dacoits while the team was camping at Rohel-jo-Kund. Arabinda Chatterjee was badly injured and his right arm was amputated and Sengupta's left index finger was also amputated while raising hands as a gesture of surrender. Sengupta, who happened to be my neighbour in Dum Dum, a suburb of Calcutta, was very affectionate to me. I used to go to the Archaeology section, while I was a student of honours course in Ancient Indian & World History, Govt. Sanskrit College, Calcutta. On my request, he readily

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agreed to part with his antiquities. I donated the objects to my Alma Mater with the hope that students can have an access to the original and unique objects from the Harappan culture.

The State Archaeological Museum under the Directorate of Archaeology and Museums, Govt. of West Bengal founded in 1962 possesses a few Harappan antiquities. The collection has been added to this museum by the good gesture of Sri Sudhin Dey, who participated in Kalibangan excavation as a student of the Delhi School of Archaeology in 1964-65 academic session. The antiquities consist of few potsherds, long blades and weights etc. which are, no doubt, new addition to this museum.

Observation

Indian Museum being a premier museum of the country should possess selective and representative antiquities from all leading sites of importance in the country, which are being unearthed by the ASI, State Directorates and other learned institutions. The Indian Museum, which used to get a huge share of antiquities from the ASI till the outbreak of the Second World War did not receive any object since then. In the post independence period many protohistoric, early historic sites have been excavated in various parts of the country revealing rich crop of materials. The above organizations may send some of their duplicate or triplicate objects to them.

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INDUS COLLECTION IN THE INDIAN MUSEUM — AN INTRODUCTION

Gopinath Ghosh

The Indus Valley civilisation widely known as Harappan civilisation or culture, flourished during 2500 -1700 B.C., ranks among the four famous civilisations of the Old World, and in extent it is larger than the combined area of contemporary Egypt and Mesopotamia. Like the other old World civilisations the Harappan civilisation seems to have grown from the skilful utilisation of the fertile river valleys. The general characteristics of the civilisation is distinguished by gridiron layout of the cities, some with fortifications, elaborate drainage system, water management, a distinctive script, potteries, standard weights and measurements showing in particular a definite life style of her people.

The Indian Museum, largest and oldest in Asia Pacific region possesses more than two thousand and five hundred specimens as her Indus Valley collection which were unearthed from excavations. The collection as a whole was received by the museum from time to time as permanent loan from office of the Director General of Archaeology during the years between 1924 and 1938.

The period of acquisition of the Harappan antiquities in the Indian Museum reveals an altogether new *vista* of India's proto-historic past. As in 1921 the past of Indian sub continent was suddenly thrown open with excavations carried out by Daya Ram Sahni at Harappa, Montegomery district, Pubjab in Pakistan. Although the site had been known to the archaeologists for a long time, it was left to Sahni to reveal the chalcolithic nature of the ruins. In the following years (1922) Rakhal Das Banerjee discovered the remains of an identical culture at Mohenjodaro, district Larkana, Sind in Pakistan. The thread was then taken up by Sir John Marshall, who with the assistance of H. Hargreaves, K. N. Dikshit and M. S. Vats organised large scale of excavations at Mohenjodaro, which continued till 1927. Further work was carried out by E. J. H. Mackay from 1927 to 1931. While Mohenjodaro received attention at the hands of Marshall and Mackay, Harappa was excavated from 1927 to 1931 by Vats.

Once the archaeological importance of these cities became known, the necessity, of an all out hunt for more sites of similar type became imperative. Thus N. G. Majumder carried out exploratory work in Sind between 1927 and 1931 and brought to light, a large number of chalcolithic sites, the more important amongst them being

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Chanhu-daro, Ghazi Shah, Lohri, Alimurad, Amri, Jhukar, Jhangar and Trihni. Activities were not confined to the Indus Valley alone. In 1929 Vats put on the proto historic map of India the site of Kotla Nihang in Ambala, Haryana. In 1935 he further noticed the existence of a Chalolithic site at Rangpur, Kathiawar in Gujarat. In the hilly tracts of North and South Baluchistan work was carried out by H. Hargreaves and Aurel Stein. While the former excavated a cemetery at Nal in 1925-26 the latter discovered between 1926 and 1927 the notable sites including Sutkagen-dor, Shahi Tump, Kulli, Zhov, Mehi, etc. In 1931 fell the axe of financial curtailment on the Archaeology department and the exploration work had to be suspended for following fifteen years. Indian Museum's collection of pre-Harappan, Harappan and post-Harappan antiquities from the excavated sites like Amri, Nal, Harappa, Mohenjodaro, Chanhudaro and Jhukar obviously falls within the discovery during the period between 1921 and 1931 which were unearthed by the pioneers in the field mentioned above.

Among the collection we find following specimens : Potteries along with painted ones, pot sherds, terracotta figurines, weapons and implements in stone and metal, utensils of terracotta, stone and metal, ornaments and beaded specimens in semiprecious stone, shell and terracotta, storage jars, burial pots, blades and weights in chert, measures, ivory carvings, terracotta toys and carts, seals and sealings, charred wheat, chessman and other items of games etc. Specimens of pre-Harappan Amri and Nal potteries and post-Harappan Jhukar potteries of the Indian Museum collection are remarkable for uniqueness and rarity of possession.

We may recall the memory Rakhal Das Banerjee one of the pioneers in the field of archaeology by remembering that out of two thousand five hundred specimens eight hundred and sixty speciments of the Indian Museum collection received on loan in 1925 from the Archaeological Survey were discovered by him from the excavation at Mohenjodaro during 1922-24.

Indian Museum's acquisition of the antiquities of the Indus Valley civilisation is historically important as all the specimens bear the flavour of pioneering excavators who worked under the aegis of Archaeological Survey during the early phase of unearthing proto historic civilisation in the Indian sub continent. Therefore, to make the collection a comprehensive one it is desired that the authorities of the Archaeological Survey of India may seriously consider to enrich the collection of the Indian Museum gifting adequate specimens discovered during recent excavations for the benefit of scholars, students and general public visiting this museum daily in thousands.

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Harappan Civilization—
an overview in the light of recent discoveries

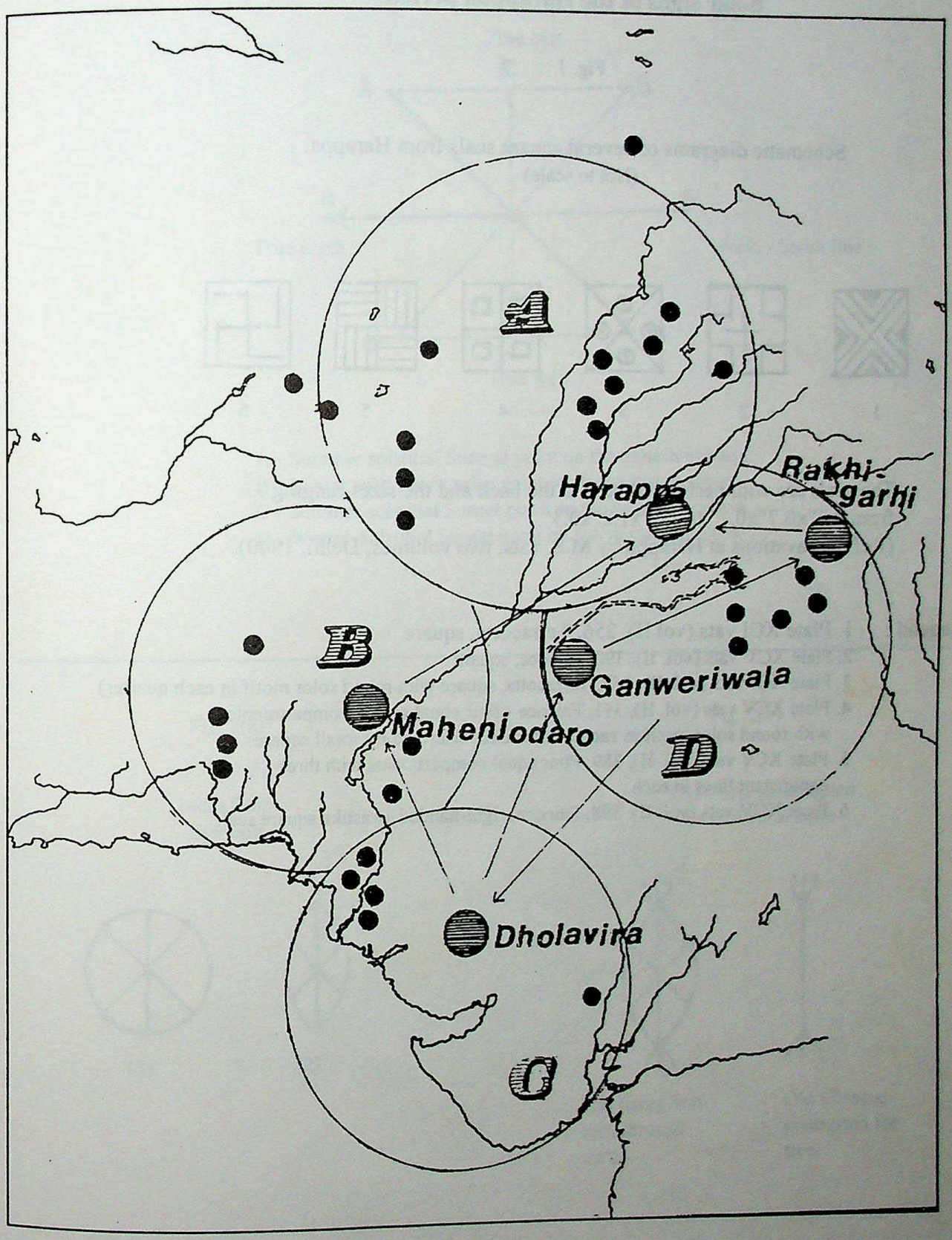

Fig. No. 1 : Showing the formation of different Zones.

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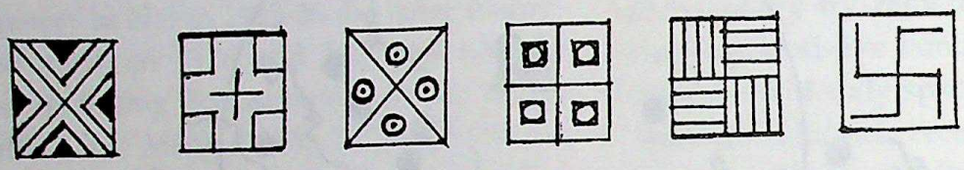
Solar signs of the Harappan period

Fig. 1

Schematic diagrams of several square seals from Harappa.
(Not to scale)



1 2 3 4 5 6

The seals are with perforated boss at the back and the sizes ranging from 0.7"x0.7"x0.1" to 1.2"x1.2"x0.3"
(Ref. Excavations at Harappa by M.S. vats, two volumes, Delhi, 1940).

Legend :
1. Plate XCI vats (vol II), 256, Terracotta, square
2. Plate XCV vats (vol. II), 390, Faience, square
3. Plate XCI vats (vol. II), 257, Terracotta, square with round solor motif in each quarter)
4. Plate XCV vats (vol. II), 391, Faience - four equal square compartments with round solor motif in each quarter circumscribed by small squares.
5. Plate XCV vats (vol. II), 389, Four equal compartments with three equidistant lines in each
6. Plate XCV vats (vol. II), 398, Faience, right-handed swastika square seal.

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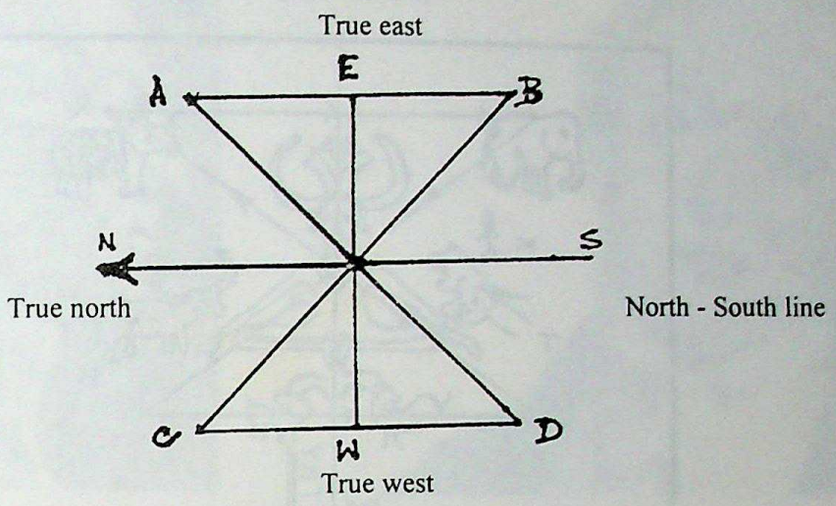
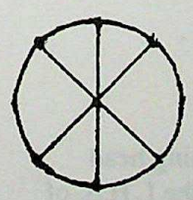
Fig. 2



A - Summer solstitial Sunrise point on the eastern horizon.
B - Winter solstitial Sunrise point on the eastern horizon.
C - Summer solstitial Sunset point on the western horizon.
D - Winter solstitial Sunset point on the western horizon.

Fig. 2(a)

Indus Solor Symbols



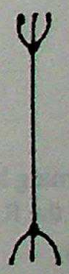
(1)

(2)

Fig. 2(b)

Old Chinese ideogram From Oracle bone

The rising Sun seen through a tree.



Old Chinese pictogram for tree.

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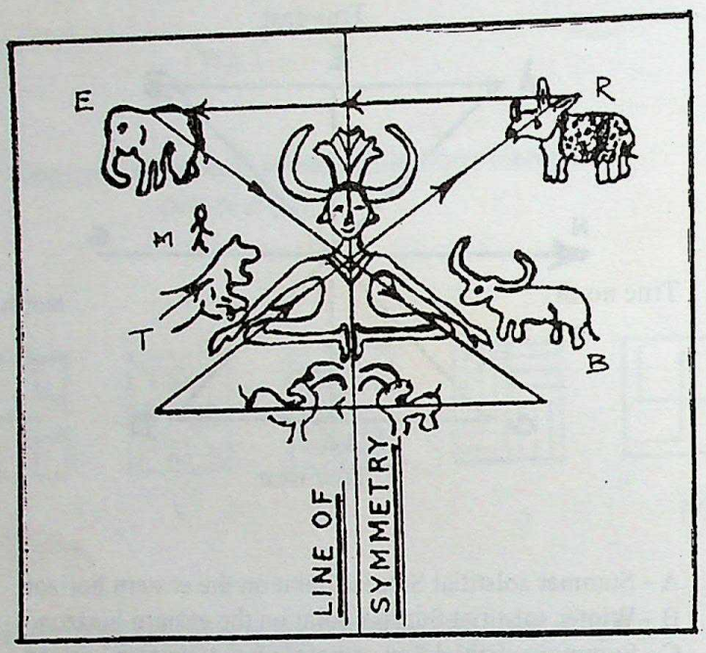
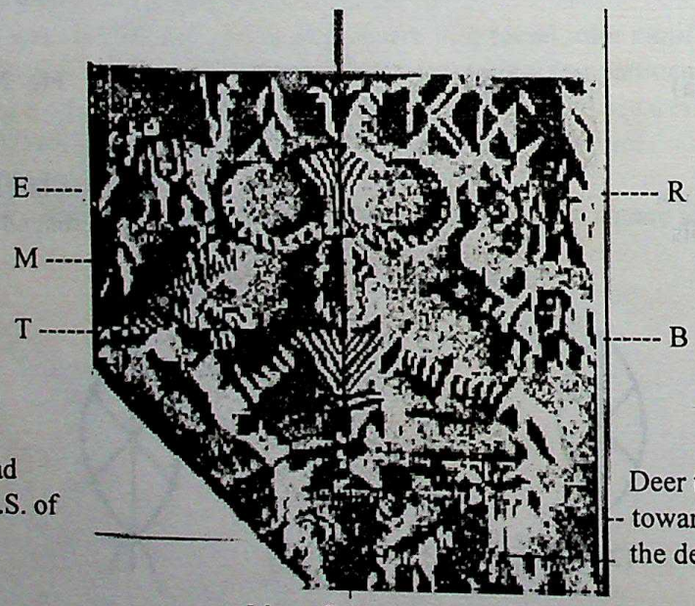
Fig. 3

Schematic diagram of the Pasupati seal showing the directional aspects of the animals.
(Not to scale)



T - Springing tiger at the vernal equinox
R - Rhino at the summer Solstice
E - Elephant,
M - Diminuitive human figure leading the elephant towards South
B - Buffalo at the winter Solstice.



Pasupati seal
(M 420)

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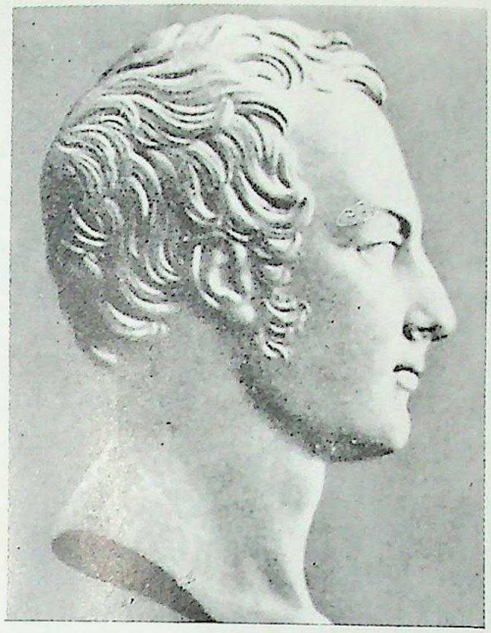

Bust of James Prinsep

Portrait of James Prinsep

Colesworthy Grant's lithographic sketch of
James Prinsep, 1837

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JAMES PRINSEP : A MAN WITH MANY SPLENDOURS

B. N. Mukherjee

Scientific and critical studies about Indian history and culture in the very late mediaeval or early modern age commenced long before the foundation of the Asiatic Society in Calcutta in 1784. The pre-Society beginning of Indian studies is suggested by dated writings of Alexander Dow (1735-79), J. Z. Halwell (1711-93), N. Halhed (the author of the famous treatise called *A Grammar of the Bengali Language* in 1778), F. Gladwin and C. Wilkins (1750-1836). The last two became the founder-members of the Society.

British traders and administrators felt the importance of mastering regional languages, laws and usages for effecting efficient business and administration. Under the patronage of Warren Hastings, the Governor General, Halhed prepared *A Code of the Laws of the Gentoos*. Hastings himself had great interest in Oriental learning and encouraged training in Persian among the civil servants. He established the Calcutta Madrasa in 1781.

All these happened before the foundation of The Asiatic Society. Even William Jones, its Founder-President, himself was already a Orientalist, having written some relevant books before he arrived in Calcutta in 1783. For the Europeans Indian studies on a scientific basis had already commenced on account of motivated, scholarly and administrative reasons.

Some of the Indians, who had developed scientific and critical attitude to life and society, also contributed to Indian studies before and/or in the first decades of the Society without having any connection with it. The foremost of them was Rammohan Ray (1772 or 1774-1833), a great linguist and an Indianist.

Nevertheless, momemtous developments were initiated when on January 15, 1784, thirty European gentlemen established the Society, and when its President William Jones observed in 1786 that "the intended objects of inquiries" should be "Man and Nature, whatever is performed by the one or produced by the other" within "the spacious limits" of Asia, India witnessed the foundation of its first research society (though dominated by the Europeans), first forum for co-operative research and for exchange of scientific views by academics, a research journal (*Asiatick Researches*), and a wide area of study of different aspects of developement concerning man and nature in Asia, though the concentration was on the Indian subcontinent and neighbouring countries.[1]

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The first five decades or so were spent mainly on the study of Indian culture and literature. No doubt, archaeological, zoological and botanical discoveries were made, scientific experiments were reported, Indian monuments were made known, and even a museum (the first of its type in Asia and the nucleus of the present Indian Museum) was established. But the main achievements were in the fields of study of philology, literature and literary criticism.

This situation was changed by the new spurt of discoveries in the north-west of the Indian subcontinent and Afghanistan (by Court, Ventura, Masson and others). Antiquities, including coins and inscriptions (and/or their copies) began to pour into the museum of the Society, and the man who changed the Society's age of literary and cultural studies and scientific observations into an era of numismatic and epigraphic discoveries and palaeographic decipherments was James Prinsep.[2]

B

The family of James Prinsep had an Indian connection. His father John made a fortune in India (1771-1788) through different types of business (including minting of copper coins at Palta near Calcutta).[3] He, however, soon lost his fortune in a commercial crisis, though he still could become a member of the British Parliament. He had some influence in London, particularly with the authorities of the East Indian Company, and so could arrange for employment of seven of his sons in India.

James, the seventh son of John and Sophia, was born on August 20, 1799, at Chelsea in the country of Essex (but now a part of London). As the fortune of the family was at a low ebb, John had to remove his family from London to Clifton, where James grew up. He received formal education only for two years. "The remainder of his education was irregular at home", with occasional aids from his elder brothers and sisters. But he developed an inquisitive mind with great power of observation and liking for engineering, art and music. Once he made a model of a carriage, not exceeding six inches, "with springs and lamps complete, with doors and windows opening and shutting and steps letting down, at will".[4]

James' skill for design and power of imagination inspired him to become an architect. Unfortunately, though he made a beginning in this direction, he had to give up the idea as his eyes were getting strained in making minute drawings. But it was a blessing in disguise for him and India. For, after attending some lectures on chemical practices, he became an apprentice to Mr. Bingley, the Assay Master at the Royal Mint in London, and ultimately received a certificate of proficiency. The future assayist and numismatist began to germinate.[5]

C

In 1819 Mr. Patterson, the Director of the East India Company, appointed James to the post of Assistant Assay Master at the Calcutta Mint. James and his younger brother Thomas reached Calcutta by the ship "Hoogly" on September 18, 1819[6] (and not on 15.9.99, as it is generally believed).[7] They were received by their elder brother H. T.

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Prinsep, who had already been in the service of the Company. James was only twenty years and about a month in age when he landed in a country still strange to him, even if not to his family.

At the Calcutta mint James met the Assay Master and his future *guru*, Mr. H. H. Wilson, a profound Sanskritist and the then (General) Secretary of the Asiatic Society. During his absence from Calcutta in 1819-20 for organising the mint in Banaras, James performed his duties at the mint in Calcutta. This period provided him with opportunities for equipping himself with the expertise in assaying and other related technical details.

In 1820 James was appointed as the Assay Master of the Banaras mint. He travelled by boat in Ocotber, 1820, and the artist in him inspired him to make sketches in pencil the landscapes as viewed from his boat. These were for a long time the prized possessions of his family in U.K.

In Banaras James relieved Wilson, joined as the Assay Master of the mint under the Mint Master Dr. Yield and became the secretary of Mint Committee. During his decade in Banaras the city witnessed the many faceted talent of a friendly *yavana*.

As an architect with a profound sense of art, James revised the plan of the building of the mint, which had already been under construction, and embellished it with architectural decors. As a member and the Secretary of the Banaras Committee, he got many streets widened, provided the city with a sewerage and laid out a deep underground drain to let out the filth and waste water of the city to a lower level of the stream of the Ganges. The system still works as a tribute to his concept of town-planning.[8]

To know the city intimately James prepared a map of Banaras (1822), a directory of the city (in 1822) and ensured for its first census on a fairly solid scientific basis.[9] Benaras, already a very widely known city, now became a well documented metropolis. The population of the city was estimated at 180,000 and together with the twenty thousand people living in Secrole and its vicinity the total added up to 200,000.[10]

Works of major repairing and construction were taken up. Among these we may especially refer to the restoration of Aurangzib's mosque, designing and construction of the building of the mint, Nandeswar Kothi and St. Mary's church and construction of a stone bridge on the Karmanasa (with the fund provided by Patni Mal).[11]

The academic in James persuaded him to establish, along with A. Duvaucel, a French naturalist, and some others, the Benaras Literary Society in 1822 and to set up a press for printing the proceedings of its meetings and academic writings.[12] While in Banaras he made several scientific experiments and observations. He invented a pyrometer and his related paper "On the Measurement of High Temperature" was published in the Transactions of the Royal Society, whcih awarded him a Fellowship when he was only 28 years in age.[13] Prinsep also developed a pluviameter (for measuring rain) and an evaporometer (to deter-

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mine the depth of evaporation),[14] and analysed the mineral water of a well at Banaras.[15] Beside these he made meteorological observations, which were partly published.[16] He also closely examined the famous Manmandir of Banaras and with the help of William Cracroft determined its latitudinal position.[17] James himself determined the longitudinal position of the city itself through scientific observations in June-December, 1827.[18] During the course of his scientific activities he was in touch with the academic circle of Calcutta, and several of his papers were published there.[19]

The city of Banaras, its people and learned men never found till then and even till the departure of the British administration from India a member of the ruling nation so genuinely sympathetic to them. His love for the eternal city was almost reverential. Once he remarked that "we have here (in Banaras) the greatest colours and costumes displayed, especially when any great festival attracts thousands of pilgrims from all the Hindu world to bathe in *our holy Ganges*"[20] (Italis ours). Here James, a Christian, was mentally appreciating, nay accepting, a popular Hindu belief.

Wroks, material or academic, did not deter him from practicing or hearing music, for which had developed a passion in his childhood. Victor Jacquemont, who visited Banaras in 1830, wrote that James "devotes his mornings to architectural plans and drawings, his days in assying at the mint, and evenings to musical concerts."[21]

Towards the end of his stay in Banaras, in 1830, he was sieged with the problem of reformation of coinage, weights and measures, which would have far reaching effects shortly afterwords (see below).[22] Meanwhile his academic and research oriented compulsions made him to remain in constant touch with the academic world of Calcutta, particularly with the Asiatic Society. He used to send papers and notes to the Society. He was elected its member on 7.7.1830,[23] and the Secretary of its Physical Class on 19.8.1830.[24] So when in 1830 the Banaras Mint was closed down and James was recalled to this old post of Deputy Assay Master at the Calcutta Mint,[25] he was no stranger to the city.

D

Beside performing his duties at the Calcutta Mint, Prinsep became deeply involved in the academic activities and administration of the Asiatic Society. Moreover, in 1931 he took over from J. D. Herbert the editorship of the *Gleanings in Science*, and continued it, with the Society's permission obtained in 1832, as the *Journal of the Asiatic Society of Bengal*. It soon became a world famous periodical,[26] and the Society became popularly known as Asiatic Society of Bengal.

In early 1832 James helped the Society in relaying the floor of the lower storey of its building.[27] Shortly before this he had been involved in another engineering feet. His brother Thomas, the Superintendent of Canals, died in early 1830, when he was engaged in digging and connecting canals (collectively known as Eastern Canals) for connecting the Hooghly with the navigation of the Sundarbans and for providing an

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additional passage for the increasing traffic between the capital (Calcutta) and the eastern districts of Bengal. James finished the work to the satisfaction of the authorities. "The locks, built by him in the midst of a soil of quicksands, upon a principle of his own devising, were regarded as a highly skilful piece of engineering".[28]

In 1832, on the retirement of H. H. Wilson from India, James succeeded him as the Assay Master at the Calcutta Mint and Secretary to the Mint Committee. He also replaced Wilson as a member in the Committee of Education and in government institutions for the instructions of Indian students. But the most important post in an academic institution in which he was Wilson's worthy successor was that of the (General) Secretary of the Society.[29]

About this time the Society faced a financial crisis, loosing its money (Rs. 11397, 12 a and 6p.) lying with an agent. Moreover, it had a debt of Rs. 5554, 13a, and 1p. This financial disaster, however, could not stop or impede the increasing academic activities of the Society. Nevertheless, the apathetic attitude of the government under the Governor-General William Cavendish-Bentinck (1828-1835) hampered the financial aspects of the Society's publications. However, the Society was able to publish during this lean financial period some useful and outstanding treatises including the works of Alexander Csoma de Körös on grammar and dictionary of the Tibetan language (in 1834). The financial stituation was somewhat normalised with increasing government patronage after the appointment of Lord Auckland as the Governor-General (1836-42) and of H. T. Prinsep, an elder brother of James, as the secretary of to the Government. During all these years the academic activities of the Society, including researches, lectures and publications (the *Journal of the Asiatic of Bengal* and the *Asiatick Researches*, up to 1839) continued.[30] As the (General) Secretary James took great care of the library and the museum, the nucleus of the present Indian Museum. He also helped in the preparation of an analylical index to the first eighteen volumes of the *Asiatick Researches*.[31]

In 1833 James completed a major work of his life, which he had commenced towards the end of his tenure in Banaras. This was about the refromation of systems of coinage, weights and measures. The amazing range of data collected by him can be guessed while going through his *Useful Tables*. In 1833 James submitted his report to the Government of India, recommending different categories of reformation, which were accepted by the latter. As a result the introduction of a "uniform coinage" for the whole of the British (East India Company's) domain in India became possible and was actually achieved by the Acts XVII and XXI of 1835 and Act XXII of 1844. The main unit of money adopted was the circular silver rupee, called the Company's rupee, weighing 180 troy grains (based on the weight of Indian *Śatamāna* or *tolā*). The gold muhrs were to be issued on the same weight. Both the classes of coins display the head of the British sovereign. The copper coinage was also standardised.[32] The popular Indian weight called *man* was taken equal to one hundred English troy pounds, and thirtyfive

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sers was considered eaual to seventytwo pounds avoirdupois. These equations established easily convertible relations "between the two English metrical scales and that of India".[33]

In Calcutta Prinsep continued his scientific observations and experiments, which he had commenced in Banaras. In addition to these, he now delved in antiquarian studies. The Society had already a sizeable collection of coins and inscriptions and their copies. Coins of the collections of A. Burns, J. Tod, C. Masson, C. Ventura, A. Court and others were now added to the Society's list of antiquities.

Prinsep commenced his numismatic studies with a review of Roman coins in the Society's cabinet.[34] But soon he became a critical assessor of the coins of the Indian subcontinent. Mainly in assoctiation with A. Cunningham, he examined different series of coins belonging to early India, the Bactrain Greeks, Indo-Scythians, Indo-Parthians, rulers of Kanauj (Gupta dynasty) and Saurashtra (Kshtrapas) and several proto-mediaeval dynasties. Many new names wes discovered.[35]

Prinsep's greatest achievement at the Scociety, nay in his whole life, were the decipherment of the Aśokan script, then called Indian Pāli (and later identified as Brāhmī), and the determination of the values of many letters of the script then called Bactrian Pāli (and later identified as Kharoshṭhī, or rather Kharoshṭhī). Following these decipherments he culled a large number of historical data from inscriptions.[36] In reading inscriptions he was helped by some scholars, including four Indian pandits (about whom we shall discuss in section E).

Prinsep also commented on some monuments and archaeological sites. We can especially refer to his observations on a ancient town and its antiquities discovered by P. T. Cautley near Behat[37] and on coins and relics found by Ventura at Manikyala.[38]

The days and hours of Prinsep were full with serious research and administration. Yet, as a charming social man with a great sense of humour, he used to attend social gatherings of Europeans in Calcutta, where his company was much sought after. He also pursued his old love for music and even became a permorming artist in the dramas staged at the Chowringhee Theatre in Calcutta.[39]

James became a family man on April 25, 1835, when he married Harriet, the eldest daughter of Colonel Aubert of the Bengal Army. Their son died in infancy, but the daughter, Ella, survived her parents and died in a mature age.[40]

Inspite of his caring family, heavy pressure of work and the Calcutta climate (not very suitable to the Europeans) now began to tell on the health of Prinsep. He fell ill in 1838. In October his condition deteriorated and he had to resign from the post of Assay Master. On 1st November he wanted to be relieved of his duties at the Asiatic Society (but his letter of resignation was not officially accepted).[41]

Prinsep sailed for England on the Herefordshire with the hope for quick recovery

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in his motherland and early return to India. Both the hopes remained unfulfilled. He died of a disease which caused him to lapse into insanity in his last days. He died on April 22, 1840.[42]

Prinspe's death was widely mourned. As memorials, a bust was set up at the Asiatic Society and a monument called Prinsep's Ghat was erected on the bank of the Hooghly and near the place where the Europeans used to land in Calcutta. Two roads were named after him (Prinsep Lane and Prinsep Street). A medallion was struck in his memory.[43] But all these were very poor compensations for the loss of the man, who served and loved India and helped her to enter the modern age of science and oriental research.

E

We may now turn our attention to the details of Prinsep's academic attainments and contributions to knowledge. His scientific observations and technical achievements were related to meteorological, mechanical, zoological, chemical, metallurgical, mineralogical geological, astronomical, marine, demographical and cartographical subjects. Prinsep maintained meteorological charts regularly in Banaras for a number of years. For two days in September, 1835, he made hourly observation in the changes of weather in Calcutta. He also noticed extraordinary fall in temperature in a gale in May, 1833, with the help of a barometer kept on the board of a ship at the mouth of the Hooghly. He studied the climate of Nagpur and made a comparative analysis of daily range of barometers in different parts of India (including Madras, Calcutta, Tirhut, Cawnpur and Simla).[44]

Prinsep devised new instruments or improved on the known ones for carrying out his experiments. We have already referred to his pyrometer,[45] pluviameter and Evaporometer, all invented in Banaras. Once he "adjusted" a "compensation tube" to a standing barometer to avoid irregular results. On another occasion he tried to measure humidity in atmosphere with the help of a "wet-bulb hygrometer".[46]

Prinsep determined the nature of fossilised bones of elephants from the Narmada valley and of different animals (deer, rat, etc.) found in the Yamuna river (area ?).[47] He made chemical (and physical wherever applicable) analyses of water (of a well in Benaras and a few hot springs), earth, stone, copper objects and an amount of brown liquid found in a casket unearthe in the ruins of a stūpa at Manikyala in the Punjab.[48] He also conducted metallurgical and mineralogical studies and analyses of metallic button-like objects from Ava (Burma), containing platinum (and thereby indicating the presence of that metal in that country), copper from Nellore, Burmese tin, and Indian coal. Attempts were made to determine the "constant" (i.e. coefficient) in the expansion of iron, gold, silver and copper. Experiments were made to devise the ways of "preservation of sheet iron from rust in India".[49]

James claimed to have devised a method of ascertaining the height of a mountain from the determination of the boiling points of water at its summit. The difference in degrees between it and the boiling point of

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water at the ground (or sea) level would indicate the height. He also reported to the Society the fall of a meteor at Azimgarh (U.P.).[50]

The comments of Prinsep on the marine observations by G. A. Prinsep indicates his interest in sea. His curiosity in the history of navigation is revealed by his note on a simple nautical instrument used by the Arab sailors.[51]

Prinsep's interest in the Manmandir in Banaras and his finding of the exact position of that city on a map have been noted above. His curiosity in astronomy is also indicated by his observations of the transit of mercury through a telescope installed in a government office in Calcutta.[52]

We have already referred to Prinsep's cartographical and demographical achievements. He prepared a map of Banaras, compiled a directory of the city and conducted its first scientific census (see sec. B). Similarly, his mechanical and engineering feats have been mentioned (secs. A and B). It may be added here that "he prepared, with his own hands, for purposes of assay, a balance of such delicacy as to indicate the three-thousandth part of a grain". It was purchased by the Government, at the time of his departure from India, for its use at the Calcutta Mint.[53]

Prinsep's ingenious mind and great common sense are revealed also by his innovations of daily use. Thus for preventing disappearance of ink on paper kept in a copper receptacle, he recommended for the use of Indian ink and English metallic ink in equal proportions.[54] In an age prior to the introduction of the custom of photographing coins for preparing blocks for their reproductions in print, James argued that an exact copy in reverse of each side of a coin could be made in "sealing wax or in type-metal". Such an exact couterpart of the die, which had been used for striking the coin, could be employed for producing a correct ink impression of a side of the coin. From such as impresions of the two sides of the coins blocks for printing could be prepared.[55]

We have already referred to Prinsep's liking for visual and performing (music and drama) arts. The lasting evidence of his skill in the former form of art is the lithographic prints in the *Benares Illustrated, A Serial of Drawings* (London, 1831). The artist and a keen observer in James gave him the impetus to perpetuate in drawings, reproduced in this publication, the temples, mosques, fairs and other landmarks and events of the city as seen by him. These pictures show the firmness of his lines, and a clear concept about the techniques of showing plans, elevations and projections. The prominence to the desired items are given by shading and cast "light" technique (as it was then known in Europe).

James might have also developed an understanding of the history of art. At least he discussed the forms and nature of "topes" (stūpas). He regarded them as both sepulchral and enshrinal in nature.[56] This view is, howeve,r as it is now known, not fully correct.

F

It is already high time to turn our attention to the subject for which James is more

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well-known than for any other of his achievements. It is his decipherment of the script then known as "Indian Pāli" (later identified as Brāhmī).

Epigraphic studies began in eastern India with the discovery of the Badal Pillar inscription of the Pāla age by C. Wilkins in 1780 and its decipherment and translation by him in 1785. His translation was published in 1788.[57]

In the next fifteen years some inscriptions (including three Maukhari inscriptions from caves in the Gaya district) were noticed and studied. Nevertheless, epigraphy and palaeography did not engage serious attention of scholars in eastern India until the fourth decade of the 19th century. In 1834 the famous Allahabad inscription of the early Gupta age was read and translated. Though both were faulty, the letters of the Gupta period could now be recognised. Through the labours of a Troyer, W. H. Mill and James Prinsep more inscriptions could be read in the next few years and the Gupta alphabet could be established on a firm base.[58]

The new knowledge, however, did not initially appear to be of much help in reading a set of inscriptions in archaic characters found on pillars, rock and stone slabs in different parts of India. Prinsep, who had become interested in them, noticed in 1834 that these were among the rarest of the epigraphs known in India, that their characters were simple and "radicals" more limited than those in all sets of early Indian alphabets, and that wherever such an inscription occured on a pillar along with other records, its position was primary (others having been obviously added later). Moreover, the ignorance about their script even in the days of Firuz Shah (1351-1388) "confirmed its belonging to an epoch beyond the reach of native research". So Prinsep declared the letters concerned as "more ancient than the Gupta characters, which at the time were believed to be co-eval with the commencement of the Christian Era".[59]

The then current theory advocating a Greek origin of the concerned letters was proved wrong by Prinsep. He remarked that "the apparently Greek letters, when inverted, resembled closely the Delhi Character [s] [*i.e.* the characters on the two pillars in the Delhi area bearing inscriptions in the relevant letters]; it would be wrong, therefore, to assume positively that they were Greek."[60]

In the next stage of his task of decipherment Prinsep made some futile attempts to find a clue. Then he "set himself to compare carefully the forms of the unknown letters with those of the Gupta alphabet, the oldest till then known".[60a] He found that certain letters in both sets of alphabets resembled one and another and so were probably identical. He was partly correct in his attempt, recognising the correct value of some of the characters (like *ya, va* and *sa).* J. Stevenson's research added a few more letters (like *ka, ja, tha, pa* and *ba*) to the list.[61]

At this stage of the progress towards decipherment Prinsep made a comparative study of the apparent contents of the inscriptions on the pillars at Allahabad, Rdhia (Lauriya-Araraj) and Mathiah (Lauriya

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Nandangarh), and also compared them with the apparent content of the Delhi (–Topra) inscription. These comparisons led him, in his own words, "to the most important discovery that all four inscriptions were identically the same".[62]

Thus not only a preliminary chart of letters was prepared, but also the feasibility of each inscription having other recensions was realised. Now, the question of language was to be settled. Prinsep was under the impression that the language was Sanskrit. Again, though a comparison of the letters with Gupta characters, enabled him to assign both the groups to the same branch of script, some of the letters concerned were still to be identified (like *na*, *ra* and, above all, *da*).[63]

The linguistic problem was solved at the third stage of progress. In 1834 Prinsep was under an erroneous impression that the language was Sanskrit.[63a] In 1835 (or 1836) C. Lassen noticed a bilingual coin of the Indo-Greek king Agathocles (*c.* 2nd century B.C.). The obverse of this type of coins displays a Greek legend readable as *Basileos Agathokleous*. The forms of the letters found in the reverse legend resembled some of the characters in the inscriptions under review [noted as "more ancient characters of Lats" (pillars with the inscriptions concerned)]. Moreover, it could be assumed that the reverse legend should have been in an Indian dialect and a translation of the Greek legend for rendering it intelligible to the Indian subjects for whose use this the coin-type was minted. These two factors were probably considered by Lassen, who read the reverse legend from left to right as *Agathukla Raja* (to be read correctly as *Rajañe Agathukleyasa*). The reading ascertained the identification of some of the letters of the group of inscriptions under review. Moreover, the language was found to have been an Indian ("native") dialect, but not exactly Sanskrit. It was slightly later (in 1837) taken as "Pāli" by Prinsep (really a form of Prakrit).[64]

The letters on a group of coins found in the Saurashtra region (really the coins of the Western Kshatrapas) helped him, to some extent, in correcting and consolidating his chart of letters. Apparently many of the letters on the early Kshatrapa coins have some resemblance to many characters of the inscriptions under review.[65] In any case, on 11th to 14th May, 1837, he read legends on Saurashtra (and a few Gupta) silver coins from the engravings sent by J. R. Stewart. Though his readings not fully correct (as he deciphered *si(ṅ)ha* as *Sāh* and *kshatrapa* as *kṛittama*), he was elated and in a letter to A. Cunningham on May 14 he wrote on an urging note *"Chulao bhai juldee puhonchoge"* ("go on brother, we shall soon get there", *i.e.* at the point of decipherment.[66]

The final stage was reached within a few days. On the analogy of the then current custom of engraving short donative inscriptions on small "chaityas" at Ava (Burma), he read the last word in short inscriptions on small stūpas at Sanchi (the Buddhist activities of which place began in the period of Aśoka) as *dānaṁ*, meaning "a gift". The reading, offered following the donative spirit of the Ava inscriptions, was facilitated by the fact that the last letter (*anusvāra*) had the same form as in later

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ages. This confirmation made him sure of the first two letters as *da* and *na*, which, as he admitted, were "most different from the known forms and which had failed me most in my former attempts".[67] This discovery was really crucial to his reading of the Delhi-Topra inscription, which had both *da* and *na* in the initial word. The form of the letter preceding *dānaṁ* had already been correctly recognised as representing dental *sa*, which was also the sign of genetive case "in Pāli" (really in Prakrit).[68] Thus two points were settled. Two crucial letters were recognised, and the language of the Bhilsa inscriptions, not very far from the age of the inscriptions under review, was taken as Pāli. So the language of the latter records was accepted as such.

Prinsep communicated his discoveries to Cunningham in a note dated May 23, 1837, wherein he deciphered the opening part of the Delhi-Topra inscription as *Devānam piya piyadasi raja hevam ahā* (should have been read as *Devanaṁpiye Piyadas lāja hevaṁ āhā).* The key to the decipherment of the group of records concerned was at last found.[69]

In the same letter Prinsep observed that "I think with Ratna Pala, whom I shall summon, we shall be able to read the whole of these manifestoes of the right faith".[70] In the *Journal of the Asiatic Society of Bengal* for 1837 Prinsep wrote that after reading the Sanchi inscriptions "in the course of a few minutes I...became possessed of the whole alphabet, which I tested by applying it to the inscription on the Delhi column".[71]

Gradually Prinsep read several other edicts of Piyadasi with help of Ratna Pal and a few others. He at first identified Piyadasi with Devānaṁpiya Tissa of Tāmraparṇī (Sri-Lanka), mentioned in the *Mahāvaṁsa*.[72] But soon, as suggested by G. Turnour on the authority of the *Dīpavaṁsa* (which refers to the grandson of Chandragupta and son of Biṁdusāra as Piyadasi), Prinsep identified the monarch concerned with Aśoka.[73] This identification is now proved beyond any doubt by the occurrence of the name of Aśoka in some of the recensions of his minor rock edicts.

The language of the inscriptions, taken as Pāli, became gradually recognised as Prakrit. The script, then known as "Indian Pāli", was correctly identified by G. Bühler as Brāhmī on the basis of *inter alia* the list of scripts furnished in the *Lalitavistara*.[74]

Before closing our discussion on the decipherment of Brāhmī, we may try to assess the role played by Indian scholars in unraveling the mystery. Prinsep frankly confessed in one of his letters to Cunningham, quoted above, that he and Ratna Pal would together read the inscriptions. His other assistants in reading and translating inscriptions (not necessarily Aśokan edicts) were Govindaram, Sarada Prasad Chakravarti and Kamalakanta Vidyalankara.[75] Of them Kamalakanta deserves special mention. About him H. W. Torrens observed in 1843 in a memorandum to the Society that Kamalakanta was a "friend and fellow labourer of James Prinsep. With him he has experienced the accurate knowledge of the ancient Pāli and Sanskrit forms of writing; for although we now possess a key to these ancient characters [*i.e.* the characters used for writing these languages], no Pandit has

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exercised himself in the act of deciphering to the extent to which has Kamalakanta... As I was totally destitute of that critical ingenuity and wonderful acumen which supplied in our lamented friend James Prinsep, the want of philological accuracy, and as I had not command of the time which he could devote to careful and patient investigation of reading ancient inscriptions, I soon abandoned the attempt to avail myself of Kamalakanta's services in this department".[76]

It is clear from the above statement, made not long after Prinsep's death, that Prinsep was himself not an expect in Sanskrit or Pāli (or Prakrit) and that he took help of Kamalakanta in deciphering the script concerned and in reading Aśokan edicts. His other collaborator, particularly in reading and translating the Aśokan edicts, was, as admitted by himself, Ratna Pal. But the scientific and critical stages, which he crossed before reaching the goal, must have been devised by himself. The Pandits, though learned in traditional subjects, had not the scientific training and background of Prinsep — so very necessary for a breakthrough in any field of knowledge. So the credit for deciphering the Aśokan script should go to Prinsep, though his assistants, mentioned above, should be considered as his collaborators in reading and understanding Aśokan inscriptions.

G

A great number of Indo-Greek, Scytho-Parthian, early Kushāṇa and other series of coins, unearthed in the north-western part of the Indian subcontinent and eastern Afghanistan, found their way to the Society's collection. These pieces were noticed to carry a Greek legend on the obverse and an inscription in unknown characters on the reverse. Due to apparent similarity between the letters on the reverse and pehlevi or Pahlavi (Semetic) characters, Prinsep was initially inclined to call the letters on Scytho-Parthian and early Kushāṇa (his Indo-Scythic) coins as Pehlevi.[77] But curiously enough while calling the characters on the Indo-Scythian or Scytho-Parthian coins as Pehlevi, those on the Indo-Greek (described by him as Bactrian) pieces were taken as belonging to an ancient type of Nāgarī.[78] However, Prinsep soon realised that the both sets of letters should have been either Pehlevi or Nāgarī. He favoured the latter, calling the script "Arian Pāli" (assuming it as a companion to the "Indian Pāli" script of the inscriptions discussed in the last section).[79] But the evidence of two inscriptions (including one of the time of the Kushāṇa king Kanishka) discovered in 1830 and 1834 at Manikyala, and a close examination of large number of "Bactrian" coins belonging Sk. Keramat Ali, Geraud and Ventura convinced Prinsep to change his opinion. He took the script of the reverse inscriptions of all these coins, following an observation of Masson, as a type of "Pehlevi" and called it "Bactrian Pehlevi".[80] He considered the language expressed by a "kind of Pehlevi" script as Pehlevi or a kindred one.[80a]

The "Bactrian Pehlevi", as in the case of the Semetic script used for writing Pehlevi, had to be read from the right to left. The obverse Greek inscritption on a coin would

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indicate the content of the reverse legend. By comparing ocrresponding groups of Greek letters on the obverse and "Bactrian Pelhlevi" or "Arian Pāli" (see below) letters on the reverse, Prinsep tried to have a number of "Bactrian Pehlevi" (or "Arian Pāli") equivalents of Greek letters.[81]

Early in 1838 Prinsep's attention was drawn to the Shahbazgarhi rock inscription, discovered in 1836, and written in a form of the script concerned, which was also found on some early coins. The recognition of the use of "Indian Pāli" script and "Pāli" language in the Aśoka's inscriptions, deciphered in 1837, might have also helped to understand the character and language of Shahbazgarhi edicts of the same monarch. Prinsep now thought that the language could have been " a dialect mainly derived from Sanskrit (as) was anciently used in Bactria". But the moment he recognised that the final letter of the reverse inscription on a coin ended in *sa*, a "regular Pāli termination of the genetive case", he realised that the language was Pāli (really Prakrit). The script was now called "Arian Pāli".[82] The name of the language was also attributed to the script. It may also be added that Ariana of classical sources, included Paropanisadai, Arachosia and Gedrosia and extended (in the east) up to the (upper) Indus.[82a]

Ariana or Ariane was the main zone for the use of the script concerned, and so "Ariana" or "Arian" would have been a better zonal name for the script than "Bactrian". Thus "Bactrian Pehlevi" was changed into "Arian Pāli". But since its similarity in form with a semetic script was all too apparent, it was taken to be read from the right to left.

There was no further difficulty in reading the script. If the Greek inscription on the obverse of a coin was *Basileos Soeeros Apollo dotou*, the reverse inscription could be read from the right to left as *Maharajasa tratarasa Apaladatasa*.

Prinsep was, however, not responsible for recognising all the letters of the script. He correctly recognised 11 or 12 (or 13 ?) (9 or 10 or 11+2) out of 36 (or 40) basic letters.[83] The rest was deciphered by C. Lassen, A. Cunningham and E. Norris.[84] By about the middle of the 19th century the main task of deciphering the Arian Pāli script was completed. However, certain letters (like *chha)* and conjuncts (like *ksha*, which had been taken earlier as *chha*) where correctly recognised later. In recent years the use of certain letters of Aramaic (Parthian) origin like *'aleph*, *ṭeth* and *śin* in the script concerned have been noticed.[85]

In the last but one decade of the 19th century the "Arian Pāli" script was identified as Kharoshṭhī. The name occurs in the above noted list in the *Lalitavistara*[86]. But the correct spelling of the name appearing in that list is *Kharoshṭī*. This mistake was rectified only in the early last decade.[87]

In 1836 Prinsep noticed at Barahat (now in the Uttarkashi district of U.P.) an inscription on the stem of a copper trident. The characters looked like "shank" "or *śankha* (conch-shell).[88] Later on, however, after examining similar inscriptions in the Nagarjuni group of caves in the Barabar hills (Gaya district, Bihar) and on the

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Allahabad pillar, he expressed doubt about their actual nature and remarked that these were apparently "merely a series of ill-drawn shanks or shells".[89] Nevertheless, subsequent researches established that the characters represented a distinct a style of writing. It was popularly named Śaṅkha-lipi on the basis of the remarks of Prinsep on the Barahat inscription. The script or style of writing was finally deciphered in 1983.[90] The first Shell inscription, noticed by Prinsep, can be read as *anila-chaṁchala-sahāya-Mṛig(āṅka)-Lalāṭāt*, meaning "from the One whose forehead has moon and who is a companion of the moving wind". This descritpion suits god Śiva very well. It is also significant that the inscription is on a trident, a well known cognizance of that deity. Though the script which is a derivative of Brāhmī,[91] it can be identified as the Avamūrdha-lipi or Vyatyastā-lipi mentioned in the *Lalitavistara* and *Mahāvastu-avadāna*[92] resepctively. The old name *Śaṁkha-lipi*, which owes it origin to Prinsep, still continues to be in use.[93]

Prinsep, so successful in deciphering two most important ancient Indian alphabets, failed to recognise correctly the symbols of early Indian numerals. He thought, perhaps following an Indian system (known from Āryabhaṭa and others), that each letter of "Indian Pāli" (=Brāhmī) had a numerical value. This wrong assumption made his reading of early Indian numerals completely erroneous.[94] Among the scholars who correctly recognised the sysmbols for early Indian numerals were J. Stevenson and E. Thomas.[95]

H

Prinsep began his career as a numismatist with some comments on ancient Roman coins in the Society's cabinet.[96] But soon he concentrated on early Indian coins, which were then being discovered in significant number.

In the beginning of his numismatic studies Prinsep believed that the early Indians used ingots and that the "art of die-cutting", so necessary for striking coins, was introduced in India by the "Macedonian colonists" (meaning Alexander and his successors, including the Indo-Greeks ?).[97] But in 1836, particularly after examining ancient silver coins in the collections of Mackenzie and Stacy, he found silver pieces puched with dies, each of which were much small than the flan. He considered them as the most ancient coins of India and as pieces stamped on at random with punches.[98] Both the observations have proved to be correct and these pieces are still called, following Prinsep's description, as "punch-marked".

Prinsep delved deep into the study of coins of the Bactro-Greeks and Indo-Greeks and Scytho-Parthians. He recognised some of the Bactro-Greek and Indo-Greek rulers not known till then like Pantaleon, Agathocleia, Archebios and Amyntas. Of the Indo-Parthian rulers he correctly read the names of Gondophares and Abdagases.[99] Of the Kushāṇa kings, called Indo-Scythic by him, he recognised coins of Kujula Kadphises and V'ima Kadphises, but thought them identified with each other. He also noticed coins of Soter Megas. In the field of Kushāṇa numismatics his great con-

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tribution was the correct attiribution of the coins bearing the legend which had been thought as written in barbarous Greek and read as *Raoranorao Kanerki Korano*. These were attributed to Kanishka (I), mainly on the basis of the Greek legend *Basileus Basileon Kanerkou*[100] on pieces of another class of coins of the same king.

Prinsep was also interested in the series which can be called Arasacid and Sasanian.[101] His more original contributions were in the fields of punch-marked and local (like Ayodhyā) coins and the series of tirbal coins, mainly found in the Behat area (later recognised as those of the Yaudheyas and Kuṇindas).[102]

Many names of the coins of "Saurashtra" (really the pieces struck by the Western Kshatrapas) were read by Prinsep, though all parts of the legends were not correctly deciphered. He could not even read *Kshatrapa,-siṁha* and *-sena* correctly. Nevertheless, in the light of our modern knowledge, we can give him the credit of recognising the names of Rudradāman (I), Rudrasiṁha (I) (son of Rudradāman I), Saṅghadāman (son of Rudrasiṁha I) (?), Vīradāman (son of Dāmasena), Rudrasena II (son of Vīradāman), Vijayasena (son of Dāmasena), Viśvasiṁha (son of Rudrasena II), Bhatṛidāman (son of Rudrasena II), Viśvasena (son of Bhatṛidāman) and Rudrasena III (son of Rudrādaman II).[103]

Prinsep also noticed Indo-Sassanian, Gupta (then know as Kanauj), and Hūna coins.[104] He very correctly pointed out the indebtedness of the Kanauj (Gupta) coin-types to those of the Indo-Scythic (Kushāṇa) family.[105]

In his study of proto-mediaeval series of specie, Prinsep could not read all the names on coins correctly. He also could not always recognise their families. But in this field also he made substantial contribution. He recognised correctly that the Ādivarāha coins (of Bhoja, the Pratīhāra king) had been connected with a Sassanian source.[106] He dealt with the "seated gooddess" type of coins of Mahādeyadeva [should be taken as Gāṅgeyadeva of the Kalachuri family], Govindachandradeva [of the Gāhaḍavāla dynasty], Madrāmahavechinama [should be taken as Mahīpāla of the Tomara dynasty ?], Kumārapāla [of the Tomara family ?], Ajayadeva [of the Chāhamāna family of Ajmer], and others.[107] Prinsep discussed the "bull and horse man" type issues of the Brahmanical Shāhis of Afghanistan and north-western India, like Spalapatideva (wrongly read by him as Svālapatideva), Sāmantadeva and Bhīmadeva. But he wrongly considered the pieces as belonging to Rajput princes.[108]

Prinsep noticed the coins of certain early Muslim conquerors, the devices of which had been adopted from proto-mediaeval coin-types.[109] He also indicated some interest in the coinage minted by the early Muhammadan rulers of Persia.[110] He also made some observations on the coins of Ceylon.[111] It appears that inspite of mistakes committed by him in his study of proto-mediaeval coins, he helped to lay down a solid foundation for future research. His another achievement in the field of coinage was his report which led to the monetary reform in 1835 (see above).

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I

Reading of inscriptions and coin legends led to discoveries of new names and facts.

Devānaṁpiya Piyadasi was identified with Aśoka. In two of his edicts Prinsep read the name of Aṁtiyaka, the Yona king, identifiable with the Greek king Antiochus II Theos of Syria (261-246 B.C.).[112] He was indicated as a contemporary of Aśoka. As pointed out by R. Hoernle, the synchronism between Aśoka and Antiochus II of Syria and Ptolemy II Philadelphos of Egypt (285-247 B.C.), mentioned as Turamaya in RE XIII, helped dating Aśoka firmly within a narrow limit of time.[113] It may be added that three more Greek kings were mentioned in RE XIII of Aśoka. They were Antekina (Antigonus of Macedonia, 278-239 B.C.), Maga or Maka (Magas of Cyrene) (d.c. 250 or 258 B.C.) and Alikasudara (Alexander of Epirus, *c.* 272-255 B.C., or of Corinth, *c.* 252-247 B.C.).

Prinsep furnished new epigraphic data for the post-Aśoka history of the Mauryas by reading in a Nagarjuni cave inscription the name of king Daśaratha (also known from Puranic sources as one of the descendants of Aśoka).[114]

Prinsep deciphered the name of Khāravela (the king of Kaliṅga) in the Hathigumpha inscription.[115] He read the names of Aśoka, Chandragupta (known for the first time from an inscription) and Sātakarṇi (apparently of the Andhra tribe or Sātavāhana family) in the Girnar inscription of Rudradāman I. But he wrongly thought that this evidence should indicate that the Mauryas and Andhras [*i.e.* Sātavāhanas] were contemporaries.[116] We have already discussed his contributions to the Indo-Greek, Scytho-Parthian and Indo-Scythic (Kushāṇa) studied.

Prinsep, as pointed out above, did a lot in reading several names of rulers of the group Saurashtra Sāhs (really Western Kshatrapas). He correctly related their silver coins with a class of Parthian (really Indo-Parthian) silver coins on one hand and the Gupta silver specie on the other. But he erroneously referred the dates on the Saurashtra coins to the Vikrama Samvat of 58 B.C.[117]

Prinsep and his associates like Tod, Wilson and Mill recognised several names of the (Imperial) Guptas. Among them were Ghaṭotkacha, Chandragupta (I), Samudragupta, Chandragupta (II), Kumāragupta (I) and Budhagupta. Though they reconstructed a part of the Gutpa history, they wrongly took the rulers as kings of Kanauj. Moreover, he accepted without critically examining Al-Bīrūṇī's statements that "the Gupta era began after the end of the Gupta rule" and that "the epoch of the Gupta era falls 241 years later than that of the Śakakāla" (*i.e.* A.D. 78), and so in A.D. 319. So he erroneously concluded that the Guptas ended their rule by *c.* A.D. 319.[118]

Prinsep also made some contributions to the studies of the history of Valabhī and a branch of the Maukharis (family of Anantavarman).[119] In the proto-mediaeval history his attentions were drawn to the [Gāhaḍavāla] rulers, like Chandradeva and Govindachandra of Kanauj, the Senas of

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Bengal, Rudradeva of the Kākatīyas of Warrangal and several others.[120]

J

Contributions of James Prinsep to knowledge naturally attracted the academic world. Honours came from different quarters within the short span of his active academic life. He was made a Fellow of the Royal Society of London and an Honorary Member the Asiatic Scoeity of Paris. He also became corresponding member of several academic societies of Europe and America.[121]

Prinsep had not only his share of honour, but also of misfortune. His contemporary and rival J. Curnin accused him and two others for their alleged involvement in misappropriation of a large amount of money from the Banaras Mint. Perhaps Curnin nursed a grudge against James who superceded him in the service of the Banaras Mint, and this led him to hatch a conspiracy against Prinsep. In any case, Prinsep was absolved of all charges in an enquiry that followed. So his honour was restored.[122]

K

Prinsep was a man of great common sense, energy, enthusiasm and curiosity in everything he came across. He had also great ability in executing the assigned jobs and in fulfilling his missions. Moreover, he was a generous person.

Prinsep was not a great Sanskritist or Paliist (or Prakitist). He took considerable help from Ratna Pal, Kamalakanta, Govindaram and Saradaprasad Chakravarti of the Sanskrit College for reading and translating inscriptions. He, however, freely acknowledged his debt to them. Nearly at the height of his glory, he complimented his young friend Alexander Cunningham, a close associate in his numismatic studies, "upon the success with which he has commenced his numismatic studies" and said that "I shall always be happy by his criticisms"[123] Later on Cnningham, the father of Indian field archaeology, returned the compliment by observing that "when I recollect that I was then a young lad of twenty-three years age, I feel as much wonder as pride that James Prinsep should have thought me worthy of being made the confidant of all his great discoveries."[124]

Prinsep was always aware of his responsibilities. He observed "what the learned world demand of us in India is to be quite certain of our data, to place the monumental record before them as it now exists, and to interpret it faithfully and literally as the document says itself, without exaggeration and without extenuation."[125]

This scientific and crititical approach always marked his each research activity. And the spirit of research forced him to plea for keeping the antiquities of India within its bounds for promoting research in that country.[126] He was indeed, as remarked by H. Falconer, "one of the most talented and useful men that England has yet given to India."

A man of many parts, Prinsep was indeed the best flower in the garden of Oriental research of his age. We only regret that the flower withered away before it fully blossomed.

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Yet he will be ever remembered in many areas of human activities, particularly in the field of Indian palaeography, where he was the pathfinder. To read an inscription for the first time requires profound knowledge of the language and the script concerned. However, for decoding the mystery of an undeciphered script there is a necessity for the touch of the magic wand of a genius. Genius he indeed was, one with many splendours.

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3. Nair, P. T., *James Prinsep — Life and Work*, vol. I, Calcutta, 1999, pp. 2-50. This volume contains a useful account of John Prinsep's activities in India. The author has also to be thanked for printing the Benaras Directory prepared by James Prinsep in 1822. But no important information about James, till unknown, has been furnished by Mr. Nair. Nevertheless, there is a useful summary of Prinsep's activities. At the same time ti should be noted that Nair's account is devoid of a critical assessment of Prinsep's contributions to knowledge, and it appears more like a catalogue of events than as a scholarly evaluation of a great personality. Moreover, the value of the book is marred by some erroneous statements. For an example on p. 51 he has remarked that John Prinsep "introduced.... copper coinage in India". Copper coinage was known in India at least from *c.* 3rd century B. C. Again, he refers to the "hieroglyphical" characters of the Aśokan edicts" on p. 74. This statement betrays a colossus ignorance about the nature of Aśokan script. In fact, since Prinsep's most important contributions to knowledge are in the fields of early Indian palaeography, epigraphy and coinage, it is well neigh impossible for a person without adequate knowledge of these subjects to wirte an authentic estimate of that scholar.
4. Thomas, E. (editor), *Essays on Indian Antiquities (Historistic, Numismatic, and Palaeographic) of the Late James Prinsep* (cited later as *EIA*), vol. I, reprint, Varanasi, 1971, p. ii.
5. *Ibid.*, p. iii.
6. This is clear from an official letter of James now preserved at the National Archives, New Delhi (no. Fin. Dept. 24-1819, no. 4). I am grateful to Sri Sanjay Garg of the National Archives for the information.
7. *EIA*, iii; Nair P. T., *op.cit.*, p. 55; Basu S., *Videśī Bhārat(a) Sādhak(a)* (in Bengali), Calcutta, 1975, p. 95; etc.
8. *EIA*, pp. IV-VI
9. For the map see J. Prinsep, *Benares Illustrated (A serial of drawings)*, London, 1931. For the report

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on the census see the *Asiatick Researches* (cited later as *AR*), vol. XVII. *The Benaras Directory*, an unpublished manuscript kept in the archieves of The Asiatic Society, has now been published in P. T. Nair, *op.cit.* pp. 226f.

10. *AR*, vol. XVII, p. 474.
11. *EIA*, p. vi; P. T. Nair, *op.cit.*, pp. 110-118.
12. *EIA* p. v.
13. *Ibid.*, p. v; J. Prinsep, *Benaras Illustrated (in a Series of Drawings)*, with an introduction by O. P. Kejariwal, Varanasi, 1996, p. 13. See also the *Transactions of the Royal Society*, 1928.
14. *AR*, 1825, vol. XV, Appendix, p. XIII.
15. *Ibid.*, Appendix, pp. XIII-XV.
16. *Ibid.*, Appendix, pp. VII-XII; *Gleanings in Science*, May, 1929, p. 158.
17. *AR*, vol. XV, 1925, Appendix, pp. I-VI.
18. *Gleanings in Science*, May, 1830; P. T. Nair, *op.cit.*, p. 158.
19. See the publications mentioned in notes 14-18 which were all published in Journals in Calcutta.
20. A family memoir quoted by O. P. Kejariwal in his introduction (p.9) to the work noted in n.13.
21. *Calcutta Review*, 1845, vol. IV. p. LXIX; quoted also in *ASBDIP*, p. 164.
22. The work mentioned in n. 13, p. 17.
23. P. T. Nair, *Proceedings of The Asiatic Society*, vol. III, bk. I, Calcutta, 1996, p. 20 (but see also p. 6); bk II, Calcutta, 1996, p. 2050.
24. *Ibid.*, bk I, p. 899.
25. *EIA*, p. VII.
26. *Ibid.*, p. VIIII; *ASBDIP*, p. 164.
27. *ASBDIP*, p. 163.
28. *EIA*, p. VIII; P. T. Nair, *James Prinsep-Life and Work*, vol. I, pp. 33-35.
29. *EIA*, p. IX.
30. *ASBDIP*, pp. 163 and 193f.
31. P. T. Nair, *Proceedings of The Asiatic Society*, vol. III, bk. II, p. 227.
32. *EIA*, p. IX; B. N. Mukherjee, *The Indian Gold—An Introduction to the Cabinet of the Gold Coins in the Indian Museum*, Calcutta, 1990, pp. 30-31.
33. J. Prinsep, *Useful Tables, Illustrative of the Coins, weights and Measures of British India*, edited by E. Thomas, London 1858, p. 95 (as printed in *EIA*, vol. II).
34. *Journal of the Asiatic Society of Bengal* (cited later as *JASB)*, 1832, vol. I, pp. 392-408.
35. A. F. R. Hoernle, "Coins", *Centenary Review of the Asiatic Society, 1784-1884*, (cited later as *CR*), reprint, Calcutta, 1986, pp. 29-35.
36. A. F. R. Hoernle, "Ancient Indian Alphabets", *CR*, pp. 50f.
37. *JASB*, 1834, vol. III p. 43; *CR*, p. 31.
38. *JASB*, 1834, vol. III, pp. 313f and 436f.

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39. Nair P. T., *James Prinsep—Life and Work*, Vol. I, pp. 76-78.
40. *Ibid.*, pp. 62-63 and 65; *EIA*, p. XIV-XV.
41. *Ibid.*
42. *Ibid.*
43. Nair P. T., *James Prinsep—Life and work*, Vol. I, pp. 78f.
44. *AR*, vol. XV, pp. VII-XII; *JASB*, vol. II, 1833, pp. 427f and 542f; vol. IV, 1835, pp. 514f; vol. V, 1836, pp. 816f.
45. "Of the principle of pyrometer it will be sufficient here to say that it was based on the melting point of different metals, and assuming 10 degrees of difference between silver and gold, and 100 degrees of difference between gold and patina. The intermediate stages were marked by decimal and centesimal admixtures of the two metals. Thus by inserting in the furnace to be tested, cuples with beads of several proximate degrees, the intensity of heat was determined by the number of these reduced to fusion". This note was copied by Dr. O. P. Kejariwal from a family memoir and published on p. 30 of his introduction to the *Benaras Illustrated* (reprint).
46. *AR*, vol. XV, Appendix, p. XIII; *JASB*, vol. II, 1833, pp. 258f; vol. V, 1836, pp. 396f and 828.
47. *JASB*, vol. I, 1832, p. 456; vol. II, 1833, pp. 583f; vol. III, 1834, p. 481f; vol. IV, 1835 pp. 500f.
48. *AR*, vol. XV, Appendix, pp. XIV-XV; *Gleanings in Science*, vol. III, 1931, p. 271; *JASB*, vol. II, 1933, pp. 434f and 509f; vol. III, 1934, pp. 567f.
49. *Gleanings in Science*, vol. III, p. 39; *AR*, vol. XVII, pp. 279f; *JASB*, vol. I, 1832, pp. 14-17; vol. IV., 1935, pp. 574f; vol. VII, 1938, pp. 197f; vol. II, 1833, pp. 27f; vol. III, 1834, pp. 191f.
50. *JASB*, vol. II, 1833, pp. 194f; P. T. Nair, *Proceedings of The Asiatic Society*, vol. III, bk. II, pp. 1275-77.
51. *AR*, vol. XV, Appendix pp. XVf; *JASB*, vol. V, 1936, pp. 816f.
52. *JASB*, vol. I, 1832, pp. 408-411.
53. *EIA*, p. VII.
54. *JASB*, vol. V, 1836, pp. 317-18.
55. *Ibid.*, vol. VII, pp. 414f.
56. *EIA*, p. 165 and f.n.1.
57. *AR*, vol. I, pp. 119-125.
58. *CR*, pp. 52-53.
59. *JASB*, vol. III, 1834, p. 117; *CR*, pp. 63-64.
60. *JASB*, vol. III, 1834, pp. 433f; *CR*, p. 59.

60a. *CR*, p. 60.

61. *JASB*, vol. III, 1834, p. 485; *CR*, pp. 60-61.
62. *JASB*, vol. III, p. 484; vol. IV, 1835, p. 426; *CR*, p. 58.
63. *CR*, p: 61.

63a. *JASB*, vol. III, 1834, pp. 487 and 495; *CR*, p. 61.

64. *JASB*, vol. V, 1936, p. 723; vol. VI, 1937, pp. 378f and 465; *CR*, pp. 61-62; *EIA*, vol. II, p. 4. Prinsep

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recognised the same type of characters in the reverse legend of a group of bilingual coins of another Indo-Greek king called Pantaleon (*EIA*, vol. I, p.401; vol. II p. 5).

65. *JASB*, vol. VI, 1837, pp. 377f. Compare A. H. Dani, *Indian Palaegraphy*, Oxford, 1963, pls. IIIa-IVb with A. Jha and D. Rajgor, *Studies in the Coinage of the Western Kshatrapas*, Nasik, 1994, charts of letters up to the time of Rudradāman on pp. 51-53. It is, however, difficult to accept what Prinsep said after deciphering the script concerned. In one place he observed that "the Asoka alphabet (the Sanskrit one) (*sic*) agrees very closely to that of our Saurashtra coins" (*EIA*, vol. II, p. 39). In another place he remarked that the characters of the Sāh inscription of (Girnar *i.e.* of Rudradaman) are "only one remove from the Buddhist alphabet of Girnar" (Girnar edicts of Aśoka) (*ibid.*, vol. II, p. 57).

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68. See above n. 67.

69. *CASR*, vol. I, p. XIII-XIV.

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71. *JASB*, vol. VI, 1837, pp. 460-61; *CR*, p. 63.

72. *JASB*, vol. VII, 1838, p. 567; *Mahāvaṁsa*, XI, 6f.

73. *JASB*, vol. VI, 1837, pp. 1055-6; vol. VIII, 1838, p. 156. A Pāli work categorically refers to Dhammāśoka as "Piyadaso" (*ASBDIP*, p. 208).

74. *Lalitavistara*, 10th adhyāya; G. Bühler, *Indian Palaeography*, Indian Studies Past and Present edition, Calcutta, 1939, p. 15.

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76. *JASB*, vol. XII, pt. II, 1843, p. 1013.

77. *Ibid.*, vol. II, 1833, p. 313; vol. III, 1834, pp. 159-178; *CR*, p. 71.

78. *JASB*, vol. II, 1833, pp. 313 and 316.

79. *CR*, p. 74.

80. *JASB*, vol. IV, 1835, pp. 327-329; *CR*, pp. 75-76.

80a. *CR*, p. 76-77.

81. *Ibid.*, p. 77.

82. *JASB*, vol. VII, 1838,pp. 638-43; *CR*, p. 78.

82a. Strabo, *Geographikon*, XV, 2, 9.

83. *JASB*, vol. IV, 1835, p. 327; vol. VII, 1838, pp. 638f; *EIA*, vol. I, pp. 180f; vol. II, p. 128f. Prinsep correctly recognised the forms of *'a, 'e, ma, ya, pa, ka*(?), *ta, ra, la, dha, kha*.(in 1835) and *sa* and *ha* (in 1838).

84. *JASB*, vol. XIV,1835, pp. 430f; vol. XXIII, 1854, p. 714; *Journal of the Asiatic Society of Ireland and Great Britain* (cited later as *JRAS*), 1846, pp. 303f; *CR*, p. 80.

85. B. N. Mukherjee, *Kharoshṭī and Kharoshṭī-Brāhmī inscriptions in West Bengal (India)* (published as the *Indian Museum Bulletin* (cited later as *KKBI*), vol. XXV) pls IV and V. An inscription on a Gandhāra sculpture, recently edited by us and awating publication, contain such letters.

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86. *Lalitvistara* 10th adhyāya.
87. *Journal of The Asiatic Society*, 1981, pp. 144f; *KKBI*, p. 9.
88. *JASB*, vol. V, 1836, p. 1; pl. IX, no. 3.
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91. *Ibid.*, pp. 27f.
92. *Ibid.*, p. 29-30.
93. For a detailed discussion on the script see *DSS* pp. 9f.
94. *EIA*, vol. II, pls. XL-XL (the column headed by the name of Prinsep), pp. 70f, especially p. 79. See also *JASB*, vol. VII, 1838 pp. 334-356.
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103. *Ibid.*, pp. 427-429.
104. *Ibid.*, pp. 407f, 227f, 360f, Hūṇa coins were discussed under the caption of Indo-Sasanian, (pl. XXXIIII, and pp. 407-412).
105. *Ibid.*, pp. 227 and 360f.
106. *Ibdi.*, p. 417.
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119. *JASB*, vol. VII, 1838, p. 966; vol. VI, 1837, p. 676; *CR*, pp. 110 and 115.

120. *JASB* vol. II, 1834, p. 494; vol. IV, 1835, pp. 668-670; vol. V, 1836, p. 659; vol. VII, 1938, pp. 40 and 907; *CR*, pp. 120-121 and 128.

121. P. T. Nair, *James Prinsep—Life and Work*, vol. I, pp. 78-79.

122. Dr. O. P. Kejariwal read a paper on this subject at a seminar on Indian Heritage and James Prinsep, held in the Indian Museum in August, 1999. See also Kejariwal's relevant remarks in his introduction to the *Benaras Illustrated — A Series of Drawings* by James Prinsep, new edition, Varanasi, 1996, p. 16.

123. *JASB*, vol. III, 1834, p. 635.

124. *CASR*, vol. I, p. X.

125. *JASB*, vol. VII, 1838, p. 227.

126. *Ibid.*, vol. 1832, p. 392; *ASBDIB*, pp. 164-167.

127. *EIA*, vol. I, p. XV.

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JAMES PRINSEP AND STUDY OF EARLY INDIAN HISTORY

Ajay Mitra Shastri

James Prinsep (1799-1840) was a gifted genius who within an extremely short span of life was able to achieve so much in such diverse fields as civil engineering, meteoro-logy, mining, metallurgy, town-planning architecture, geometry, mathematics, astronomy, natural sciences, anthropology, archaeological disciplines including epigraphy and numismatics and history and, what is most remarkable, all this without any formal training and not connected with his given profession. The Assay Master of the Benares mint ad later (after its abolition) Deputy Assay Master under H. H. Wilson and then Assay Master of the Calcutta mint, he made several reforms in the metrology of the rupee. But his interest was multiface-ted and he just could not restrict himself to his professional duties.

And his posting at Calcutta in 1830 may be said to have been a landmark in his short-lived academic career. His scientific aptitude brought him into contact with the Asiatic Society of Bengal (founded 1784) and more particularly with Major Herbert who initiated *Gleanings in Science* with the object of making known in India the latest scientific discoveries made in Europe and affording the Indians, especially Europeans in India, with a scientific bent of mind, a means of airing their discoveries and ideas to the outside world, and James Prinsep was a large contributor to it right from its start and his writings were one of the most prized and widely appreciated original essays. A few months later, in 1931, on Major Herbert's departure to take up as Astronomer under the King of Oudh, Prinsep took complete charge of the *Gleanings* which he converted into the *Journal of the Asiatic Society of Bengal (JASB)*, then a monthly publication, after taking over as the Secretary of the Society (1932) wherein he had already been highly active academically. The Asiatic Society was then almost the sole depository where all the Europeans, whether in government employment or engaging themselves in private occupations, sent or deposited all the information about or the material itself of historical or scientific importance they came across in course of their work or as hobby for having it identified, studied and published. And with his deep insight and multifaceted interest and devotion, Prinsep, now equipped with a forum in the form of the *JASB*, processed much of this material and either himself wrote essays on it or introduced or commented on the communications of others and in the proc-

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ess familiarised himself with and presented it before the scholars. These publications, as regards historical disciplines, concerned themselves primarily with the coins of Indigenous and foreign rulers of India, especially the latter, and inscriptions. By his perseverance he was able to almost complete the process of decoding the two primary Indian scripts, *viz.* Brāhmī (called Pāli or Sanskrit) and Kharoshṭī or Kharoshṭhī (called then Bactrian or Arian Pāli), in which or in the former's derivatives most of the early Indian records, comprising independent epigraphs and coin-legends, were composed. In fact, this constitutes his most significant contribution to the study of early Indian history. Almost of an equal value are his contributions to the field of numismatics, and he was able, on the basis of his study of coins and inscriptions, to give genealogies of several ruling families, albeit naturally defective and incomplete due to paucity of dependable material. Although a modern historian may, and certainly will, find his writings outdated in the light of the vastly advanced knowledge of these disciplines now, there is no doubt whatever that the foundations were laid by, *inter alia*, James Prinsep without whose contributions one can't just think of the present greatly advanced state of one's knowledge in these fields. And what is most remarkable, all this was achieved by him within a short span of just about seven years, *viz.* 1932 to 1938. And he passed away in April 1840 due to a serious ailment that he developed due to his mental overwork and exhaustion which speaks kudos for his unparalleled devotion and sincerity.

Perspective

This extremely brief account of his life and activities should serve as the backdrop against which we have to evaluate his immense contribution in the field of early Indian history. We must remember in this connection that this was not his full-time job and that he did all this in addition to his normal official duties as the Assay Master of the Calcutta mint in which capacity also he introduced a lot many monetary reforms. We may therefore call it his hobby which was practised by him so well.

We must also note that his job in this capacity was mostly something like that of an easy chair archaeologist : he studied only such material, primarily epigraphic and numismatic, as came to him or was brought to his notice in the capacity of the Secretary of the Asiatic Society and the editor of its prestigious journal or as a scholar. He himself did not generally speaking, go in search of the material himself.

And all his historical writings cover a short period of just about seven years (1832-38) and were published in the pages of the *Journal of the Asiatic Society of Bengal*, mostly by way of elucidating or comments on the communications of several accidental officers, civil or military, and occasionally as independent contributions emanating from these comments.

Almost all the historical deductions and statements of Prinsep are based on or drawn from his observation or study of inscriptions and coins, principally the latter, and they can't be described as independent historical studies in the modern sense. They

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are thus historical deductions from the study of coins and inscriptions, and naturally there is no question of any completeness in them expected of historical writings based on all the various sources. They are actually disjoined inferences from coins and inscriptions, only occasionally backed by other sources. It will become clear from some of his observations about the high value of inscriptions as elucidations of history and confirmations of their testimony by that of coins in his *Useful Tables illustrative of the Coins, Weights, and Measures of British India together with Chronological Tables and Geographical Limits having Reference to India and Other Kingdoms of Asia.*[1]

We must also remember that Prinsep flourished in an age when history meant, by and large, the chronicles of rulers and practically no attention was devoted to socio-economic aspects even in the West. Moreover, the sources he depended upon primarily, inscriptions and coins, the latter more prominently giving only the names of the ruling powers, conditioned his historical outlook, leaving no room at all for cultural history. And it was also the need of the time when Indian chronology, more especially of its early period, which should form the bedrock of any real historical analysis, was itself quite uncertain.

If we keep these facts in our mind, we shall be able to form a much better appreciation of the value of his contributions to historical studies than otherwise.

Early Indian History

What contributed most to the unravelling of the early Indian history was the decipherment of early Indian inscriptions and coin-legends inscribed in Brāhmī and its later derivatives and Kharoshṭī (or Kharoshṭhī) which had continued to baffle scholars for quite a few centuries[2]. "While several scholars attempted and contributed to their decoding, the mystery surrounding these scripts was finally unravelled to a great extent by James Prinsep by working hard with the facsimiles of ancient inscriptions and coins sent to the Asiatic Society for some seven long years and with imagination. And as regards Brāhmī the final moment arrived one fine morning in 1837.[3] In this the short votive inscriptions from the *stūpas* of Sāñchī, all ending with *sa dānaṁ*, proved to be of inestimable importance. The riddle of the other script was also finally solved with the help of the coins of foreign rulers of India with bilingual legends, *viz.* Greek and Kharoshṭī (or kharoshṭhī). And after completing the decipherment of Brāhmī he tried to apply it to coin-legends and read other inscriptions beginning with those of the Mauryan emperor Aśoka which happened to be the earliest known Brāhmī records. He accepted the identification of Piyadasi of these inscriptions which the Mauryan emperor Aśoka proposed by Turnour[4] and located in two of his Rock edicts at Girnar and Dhaulī the names of contemporary Greek rulers of Greece, North Africa and West Asia including Antiochus (Aṁtiyoka), explicitly referred to as *Yonarāja* (Skt. *Yavanarāja*, viz. Greek King),[5] and allusions to Ptolemy (Turamaya), Antigonus (Aṁtekina) as well as Magas (Maka) whom he dated about 260 BC.[6] The references to the last-named king made him modify his

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own earlier theory identifying Aṁtiyoka with Antiochus the Great who lived much earlier.[7] This enabled him to assign a correct date to Aśoka in the third century BC which proved to be the hallmark of the early Indian chronology.

He appreciated the value of numismatics in the reconstruction of what he (in line with other early European scholars) called 'Hindu' (early Indian) history. At one place he observed, 'Hindu history is even in more need of elucidation from coins than Bactrian'.[8] As an example he referred to the coins dug out by Capt. Cautley at Behāṭ (Sahāranpur district, Uttar Pradesh) which, as we can say now, belonged to the Yaudheyas and Kuṇindas. He identified the three letters *ya dha ya* (of the name Yaudheya) correctly on the Bull-Elephant type of the Bahudhānyaka (*Bahudhañaka* on coins) series which constitute the oldest of the Yaudheya specie, but he proposed to attribute them to Ayodhyā as he treated them as parts of the name Ayodhyā.[9] And he was not prepared to assign these coins to 'any greater antiquity than the early part of the Christian era' for the simple reason that they were associated 'with those of the Indo-Scythian dynasty'.[10] On the obverse of the Amoghabhūti series of the Kuṇinda coins his revised final reading of the Brāhmī le-gend was *Amapataśatasa Maharājasa Kunarasa*[11] which made no sense. On the later anonymous series of Kuṇinda[12] coins he read finally, rather doubtfully, *Bhagavata cha* (or *sa*)[13] The correct reading, as we have shown elsewhere,[14] is *Bhagavata* (or *-to*) *Chitreśvara-mahātmanaḥ*. On the Mahārāja coin from Behāṭ he was able, finally, to read the legend correctly as *Mahārājasa*,[15] but his guess about its attribution is quite interesting though, of course, purely conjectural and extremely doubtful. He observed, "The application of the word *Mahārājasa* in the genitive, with no trace of a name, might almost incline us to suppose that the title itself was here used as a name, and that it designated the 'Maharaje, king of Awadh', of the Persian historians, who stands at the head of the third lunar dynasty of Indraprastha, in the 'Rājāvalī' !"[16]

It is time now to refer to the Indo-Greek kings Pantaleon and Agathocles who are the only hitherto known kings of the whole group to issue some square copper coins with Brāhmī (instead of Kharoshṭhī or Kharoshṭī as on the coins of other Indo-Greek kings) legend on the reverse, while we have the usual Greek legend on the obverse. Actually the bilingual character of these coins helped him in ascertaining the phonetic value of the Brāhmī letters forming part of the reverse legends. He cited the opinion of Prof. Lassen who proposed to read the Brāhmī legend as *Agathuklarāja* (Agathuklayesa) from left to right. He had some objection to this 'highly plausible solution' of the Agathoclean legend[17] but he did not elaborate. He, however, felt inclined to suppose that the Greek genitive case was rendered as literally as possible into 'Pāli'[18] character and himself proposed to read the legend as *Agathuklayej*, preceded by the title *rājā* of which the letter *ja* was legible.[19] On the coins of Pantaleon he read doubtfully the Brāhmī legend as Pantalevasa.[20] And his final readings of the names on these coins appear to have been

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Agathuklayoj and *Pantalawanta*[21] But on palaeographic grounds he placed both these kings in the third century before Chirst.[22] Prinsep regarded the Indo-Scythian king Azes (read as Azos) as Greek and took its Sanskrit form Aja as but a corruption of Ajaya, 'the unconquered.'[23]

Prinsep correctly regarded Kadphises as the immediate predecessor or Kanishka whose name in the obverse Pehlavī legend was read by him as Kanerkos,[24] as was done by so many early European students of Kushāṇa numismatics.[25] He also placed Kadphises after what he called *Kadphes choranos*(?). But he had some misconceptions about the Kushāṇas a few of which may be mentioned here. He felt that 'as the word *Kadphises* never occurs except in conjunction with some other name, as OOHMO or OOKMO,[26] it may be read as a patronymic appellation of the family — 'the descendants of Kadphises.'[27] He had read the greater part of the name of Kanishka correctly as 'Kaneshsm'.[28] He regarded 'Rao Kanerki' as a 'Hindu[29] or Indo-Scythian'[30] whom he placed in the fourth century from the find of his coins in association with those of the Sassanian king Shāpur II (310-80 AD) in the Manikyāla *stūpa*.[31]

Prinsep studied a fairly large number of the coins of what historians now known as the Śaka (or Kārdamaka) Kshatrapas of Western India and formed as fair an idea about their sequence and annals as possible during those days. He could not solve all the problems concerning them for want of the requisite material as well as due to the imperfect reading and interpretation of the names of the issuing monarchs on some of their coins and in the few known inscriptions. He called the dynasty Sāh because he read the word *sena* at the end of the names of some of the issuing monarchs as *sāha*.[32] He placed Svāmin Chashṭana before Chandragupta Maurya and credited him with the original creation of what he called 'the Girnār bridge'[33] which was 'then either repaired or more probably completed by his son Aridāmā or Atridāmā ...in the year 72.'[34] ...The bridge was then totally destroyed by the inundation' ...and was 'Thus temporarily repaired, perhaps by the inhabitants, it was carried away; and a more thorough reparation was commenced under orders from Chandra Gupta Maurya, by his prefect of the province, Pupya Gupta, and completed in the reign of Aśoka, his grandson, thirty or forty years afterwards, by his Greek officer ...*Yavana rāja*' the word containing whose name he read as *Thushaspena*. He somehow treated 153 BC as the date of the Mahākshatrapa Rudradāman and accordingly placed him about a century after Aśoka. [35] He was inclined to take the dates of the other Kshatrapas as belonging to the era of Vikramāditya,[36] thereby placing them about 135 years earlier than it is done at present referring the dates of their epigraphic and numismatic records to the Śaka era commencing 78 AD. He regarded one Kudos as the progenitor of what he called the Sāh kings.[37] What is most interesting in this connection concerns the designation Kshattrapa which he treated as of Indian origin. He observed, 'I do not believe that the etymology of this name has ever been traced. It is called a Persian title, but the Persian dictionaries only contain *Satrab*, as

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an obsolete term for the governor of a province, without explanation of its origin. In Sanskrit it signifies the ruler, feeder, or patron of the *kshatra* or military class; and now that we know the ancient language of Persia east of the Euphrates to have been a near dialect of the Sanskrit, we may conclude that Satrapa had the same signification in Ariana.'[38] His interpretation of the personal names of some of the 'Sah' kings is also quite interesting though based on some erroneous readings. In this he was also misled partly by the typical bias of the early occidental Indologists that Buddhism was the most popular religious sectarian persuasion of early Indians. 'It is remarkable that', he observed, 'in the long string of epithets applied even to Rudradāmā, the chosen Satrap, there is none which bears the slightest allusion to Hindu mythology; while, on the other hand, the coins of the whole dynasty bear an emblem which we have hitherto considered either of Mithraic or of Buddhist import.[39] The name Jinadāmā[40] (wearing Buddha[41] as a necklace) is decidedly Buddhistic; and the epithet applied in the inscription of Rudradāmā, — 'who, from right persuasion, never put any living creature to death', — proves that Rudra's opinions were at any rate influenced by the proximity of the important Buddhist establishment at Girnār.'[42]

Prinsep also studied the then known Gupta inscriptions and coins and made some really dependable observations. But the epigraphic and numismatic gaps and the imperfections of readings sometimes obscured the reality as we now know. He regarded the Gupta coins as the second class of Hindu coins,[43] the first, as we have seen above, being the Kushāṇa series. He ascribed some coins to Ghaṭotkacha, the second member of the Gupta dynasty who was the son and successor of Gupta and the father of Chandra Gupta I. He read the legend on the reverse of these coins as *Śri madghavakacha*,[44] while in fact the legend is *Siṅgha (ṅha) vikramaḥ* and the coins in question belong to the archer type of Chandra Gupta II.[45] He was inclined to date the inscription on the iron column standing aloft at Meharaulī in New Delhi in the third-fourth century AD,[46] which is rather too early in view of the now usually accepted identification of king Chandra, whose exploits form its theme, with the Gupta emperor Chandra Gupta II Vikramāditya and the fact is evident from his description that it was put up posthumously, probably by his son and successor Kumāra Guptá I. Basing on his reading of the legends on some of the coins he proposed to add 'the name of Mahendra-gupta, and perhaps of Assagupta to the list." He also felt that 'there is presumptive evidence of a second Samudra as of a second Chandra.'[47] On the reverse of the coins of Chandra Gupta I he read the legend as *Pachehhavayaḥ* and took 'the upper prolongation of the *p* perhaps' to indicate an *anusvāra* and thus took the correct legend to be *paṅchchhavayaḥ* which, he felt, was intended for *pañcha chhavayaḥ*.[48] But all this speculation speaks of the age when the readings were rather uncertain.[49] But we have to concede that he was aware of several Gupta coins and inscriptions including the well-known Allāhābad pillar inscription of Samundra Gupta which had been deci-

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phered in full almost correctly earlier.

Now coming to some aspects of the post-Gupta history. He regarded all the kings with *pāla*-ending names as offshoots of the Pāla dynasty of Gauḍa or Bengal. He felt that although the dynasty hailed originally from Gaur in Bengal, it had fixed its government, for a time at least, at Kanauj.[50] He went so far as to assign even Vigrahapāladeva and Pṛithvīdeva to the Pāla or Deva dynasty of Kanauj.[51]

Is is now well-known that Bhoja or Mahirabhoja of the Pratihāra dynasty of Kanauj issued coins with the legend *śrīmad-Ādivarāha*. But following Wilks, Prinsep assigned these coins to the Vijayanagara series just because Varāha (Boar) was the emblem adopted by the Vijayanagara rulers and their gold coins bearing the impressions of this emblem came to be called by this name (Varāha). It must be recorded, however, that Prinsep himself was very doubtful about this attribution because these coins were found from the regions far away from the areas under the Vijayanagara rulers.[52]

We now naturally possess a much fuller knowledge of the Hindū Shāhi rulers of Afghanistan and Panjab than was the case with the days of Prinsep. But he was aware of their Bull-Horseman type coins though the readings of their legends were still in a formative stage. He read on what are now called Sāmantadeva series the issuer's name as Śamagradeva or Śamantadeva, of which he preferred and described as 'the most plausible' the latter. On Spalapati coins he regarded as 'the most obvious' the reading *Syālapatideva*.[53]

Resume

The above is only a brief survey of the huge contribution of James Prinsep to the study of early Indian history, it being impossible within the limitations of the short space afforded by a paper like the present one to present an exhaustive account of all his historical writings which were simply immense. This survey is naturally selective confining itself as it does only to some salient facets of what may be called most important phases of the early history of India. We have mostly taken note of the inaccuracies of Prinsep not with the object of belittling his pioneering contributions but simply to illustrate how scholars were grappling with various problems and adding to the growth of knowledge gradually by their strenuous efforts. In the process some of the earlier notions based on the then available evidence were rendered untenable as a result of the find of some new material which rendered a revision of the earlier positions imperative, and these scholars whom Prinsep typifies were ever prepared to concede their mistakes and adopt the fresh resultant position. Not to speak of those days when very little material was available, in our own times we have the experience of how a fresh discovery unsettles and renders inaccurate an opinion or theory based on a dispassionate study of the extant evidence[54]. Those were the formative days of early Indian historical studies when investigators were adding bit by bit to the growth of historical studies. And we should not compare modern positions in these matters with those of Prinsep and his predecessors and contemporaries who wrote a little over six-

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teen decades earlier, and it is no exaggeration to state that the present state of historical knowledge, especially in so far as early India is concerned, when we know quite a lot with certainty, is just unimaginable without the tireless sincere efforts of the great savants of the eighteenth-nineteenth centuries.[55]

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2. When in the fourteenth century AD Firoz Shah Tughlaq had shifted two Aśokan columns from Toprā and Meerut to Delhi (consequently known among historians as Delhi-Topra and Delhi-Meerut pillars), the *paṇḍits* could not read the writing on them and just tried to fool the emperor about its contents.
3. It is described in detail in *JASB*, VI, 1837, pp. 460-77, 566-609. The relevant paragraph is cited by K. N. Dikshit in *The History and Culture of the Indian People*, I : *The Vedic Age*, eds. R. C. Majumdar and A. D. Pusalkar, Mumbai, 1951, p. 67.
4. *Essays in Indian Antiquities* (hereinafter *Essays*), II, ed. Edward Thomas, John Murray, London, 1858, p. 13.
5. *Ibid.*, II, pp. 12-21.
6. *Ibid.*, II, pp. 18-21.
7. For this equation, see *Ibid.*, II, p. 12, caption of the article, read at the meeting of the Asiatic Society of Bengal on March 7, 1838.
8. *Ibid.*, I, p. 198.
9. *Cf.* 'The three most conspicuous letters on all of these coins are...y *dhy*, and it does not seem any great stretch of imagination to see in them parts of the word Ayodhyā, the seat of one of the earliest Hindu dynasties, and which was, at the commencement of Buddhism, almost as much the resort of its founder Sākya, as Rājgṛiha, the capital of Magadha. '*Vide ibid.*, I, p. 202. For the drawing of the coins, see P1, XIX.5-6.
10. These coins are now commonly placed about the late second-early first century BC. *See* John Allan, *BMCAI*, Introduction, p. cxlix.
11. *Essays*, I, p. 203. This was his reading in June 1837.
12. Some scholars like Devendra Handa are inclined to ascribe these coins to the Yaudheyas. We also felt at one time the same way but gave up this position later.
13. *Ibid.*, I, p. 117. This reading was also proposed in June 1837.
14. *Vide* our paper 'Interesting Kuṇinda and Yaudheya Coins', *Numismatic Digest*, VIII, 1984, pp. 24-30.
15. His original reading was *parājasa*. See *Essays*, I, p. 202.
16. *Ibid.*, II, p. 2.

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17. *Ibid.*, I, pp. 400-01.
18. This was the name used by Prinsep and other European scholars to denote what is now called Brāhmī, for this latter name was not yet known.
19. *Ibid.*, II, pp. 4-5.
20. *Ibid.*, I, p. 401.
21. *Ibid.*, II, p. 7. These readings were suggested in a meeting of the Asiatic Society of Bengal held on 7th March, 1838.
22. *Ibid.*, II, p. 7.
23. *Ibid.*, I, pp. 353 and 354.
24. But elsewhere we find him taking a different position : 'Coins of Kadphises from their comparative rarity in the Manikyāla collection appear to have belonged to a different region from those of Kanerkos, or to have been antecedent to them by a *period sufficient to render them scarce in the district.' Vide ibid.*, I, p. 126.
25. *Ibid.*, I, p. 227.
26. It is a misreading for Oemo which is the Greek spelling for Wima or Vima.
27. *Ibid.*, I, pp. 227-28.
28. *Ibid.*, I, p. 143.
29. In fact, he treated his coins as representing the first 'Hindu series' based on or following the Indo-Scythian series.
30. *Ibid.*, I, p. 150. Marsdan even proposed to date the *Manikyāla stūpa* as late as the seventh century AD.
31. *Ibid.*, I, p. 151.
32. *Ibid.*, II, p. 79. *See* the caption 'Sāh Inscription from Girnār in Gujarat', *Ibid.*, II, p. 55; plates facing pp. 52 and 53 where 'Sāh inscriptions' are specified.
33. *Ibid.*, II, p. 60.
34. *Ibid.*, II, pp. 60-61.
35. *Ibid.*, II, p. 79. He considered various possibilities and this was his final preferred conculsion.
36. *Ibid.*, II, p. 80.
37. *Ibid.*, I, p. 335.
38. *Ibid.*, II, pp. 63-64.
39. The reference is to the reverse devices including what was then commonly regarded at standing for *chaitya* met with on their silver coins.
40. An erroneous reading of the name Jīvadāman.
41. Jina is another name of the Buddha, albeit rarely used.
42. *Ibid.*, II, pp. 64-65.
43. *Ibid.*, I, p. 282.
44. *Ibid.*, I, pp. 87-89.

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45. See *Ibid.*, I, p1.IV.24, for the illustration.
46. *Ibid.*, I, pp. 319-21.
47. *Ibid.*, I, p. 366.
48. *Ibid.*, I, p. 369. He was not quit sure about the connotation of the expression *pañcha chhavayaḥ*. He observed, 'whether the word *chhavaya*, 'light', may have any allusion to the five luminaries of the Mithraic worship—the Sun, the Moon, Fire, Jupiter, and Venus—it is impossible to say; but that a king should possess five virtues we learn from various Hindū authorities.'
49. The correct reading, as we know now, is *Lichchhavayaḥ* which refers to Chandra Gupta I's in-laws.
50. *Ibid.*, I, pp. 293-94. He went so far as to hold that the Tomara and Chaulukya-Vāghela kings of Gujarat who adopted *Pāla*-ending names also belonged originally to the Pāla dynasty of Gauḍda in Bengal.
51. *Ibid.*, I, pp. 395-96.
52. *Ibid.*, I, pp. 295-96.
53. *Ibid.*, I, p. 304.
54. *See* Ajay Mitra Sastri, "King Svabhāvatuṅga of Somakula : Problem of Identity', *Journal of the Epigraphical Society of India*, XXIV, 1998, pp. 10-21, where we have shown how our earlier view that Svabhāvatuṅga was the personal name of the Somakulin king Mahābhavagupta I Janamejaya based on an analysis of the extant material was rendered untenable by the discovery of the Gopālpur plates of the first year of Mahābhavagupta I Janamejaya of South Kosala which shows that it was the personal name of Janamejaya's father and immediate predecessor on the throne.
55. Unfortunately due to non-availability of the relevant volumes of the *JASB* we had to depend on the *Essays* which, more often than not, does not give his writings in a chronological order, and therefore often we had to content ourselves with just referring to his views on various historical issues.

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PRINSEP AND THE DECIPHERMENT OF TWO EARLY INDIAN SCRIPTS

I. K. Sarma

James Prinsep, son of John Prinsep, was born in 20th Aug-1799 and died prematurely on 20th (or 22nd) April-1840 at the bare age of forty. His sudden demise due to softening of the brain caused by overwork has virtually orphaned the Indian Archaeological studies. He was the first Indian Antiquarian to use the term "Field Archaeology".[1]

The oldest Indian writing, barring the Indus script, is *Brāhmī* which was created by *Brāhmā* (*Namo Bambîye libiye* : Bhagavatī Sūtra), while Prinsep was indeed our *Guru-Brāhmā*. We had this *Aksharābhyāsa* from him and thanks to Princep the *Brāhmī-Varṇamālā* remained as the veritable treasure of all Indian scripts and languages. Prinsep dedicated his life not only in deciphering all the Brāhmī letters (partly Kharoshṭī also), but executed a series of accurate drawings and plans of the ancient city of Benaras, its temples and buildings and guided the Asiatic Society Calcutta as its distinguished Member-Secretary. By perpetuating the memory of this greatest being, the Indian Museum, Calcutta is honouring itself.[2]

Early academic efforts of Prinsep :

Archaeology was saved by the genius[3] and labours of a remarkable man named Prinsep who came to Calcutta in 1819 and took up the assignment as Asst. Assay Master at the Calcutta Mint, later Assay Master at the Benaras Mint 1820-30; a Deputy in 1930 and again an Assay Master from 1832-38 at the Calcutta Mint. As the Secretary of the Asiatic Society, he assumed the direction of the entire archaeological work in India. Princep was essentially a man of Science[4], and he brought to bear scientific love, orderliness, precision and collected factual data which enabled him to march from discovery to discovery with an amazing swiftness. Prinsep's initial attempts to study ciritically and in meticulous detail the Temple architecture was remarkable. His methodology and objective approach, the architectural terms used along with accurate drawings and plans of the streets, buildings and temples of Benaras between 1820-1825 lead to the publication of several architectural works of major importance[5]. Prinsep in 1831 had started the Journal[6] *"Gleanings in Science"* in conjunction with Major Herbert which on the 7th March, 1832 changed its name into *Journal of the Asiatic Society of Bengal*. Besides, a substantial portion of the *Annual Report* of the Archaeological Survey of India was devoted to the announcement of fresh epigraphical discoveries, the process of decipherment and interpretation, etc.

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Attempts at decipherment of scripts :

In 1834-35 James Prinsep examined the inscriptions on Aśokan Pillars at Delhi and Allahabad, at Radhia (Lauriya Araraj), and Mathiya (Lauriya Nandangarh), both in Champaran district, Bihar and recognised the interesting fact that they were copies of one and same inscription[7]. At the same year (1834) James Stevenson had recognised the value of the early *Brāhmī* letters *Ka, Ja, Pa, Ba* and in 1836 Prof. Ch. Lassen of Bonn University, Germany determined the value of a few characters on the basis of certain coins of the Greek rulers bearing the legend in Greek on the obverse and translation on the reverse in *Prākrit* written in early *Brāhmī* characters containing identical names of the king. Thus the key to the decipherment of the alphabets was supplied by the coins of the Indo-Greek kings with bi-lingual and bi-scriptural legends and certain Edicts of the Mauryan Emperor Aśoka were written in both *Brāhmī* and *Kharoshṭī*. *Kharoshṭī* was an Indian modification of the old Aramaic script of Western Asia, popularised in the North-western India during the rule of Achaemenian emperors of Iran. The Edicts of Aśoka, 269-232 B.C., discovered in Peshwar and Hazara districts were in *Kharoshṭī* script. We shall cite two examples here.

	Coin of King Agathocles	Coin of King Panteleon
Greek	: *Basileos*	*Basileos*
	Agathokleous	*Pantaleontos*
Prākrit	: *Rājānē*	*Rājānē*
	Agathukiēyasya	*Patalēvasha*
Sanskrit	: *Rājñaḥ*	*Rājñaḥ*
	Agatuklēyasya	*Pamtalēvasya*

In June-1837, Prinsep studied the short label inscriptions received from the Sanchi *Stūpa*. The dedicatory ending in the expression *dānam* preceded by the donor's name in the sixth case ending *Sa ssa = sya*. Prinsep rightly conjectured that they stand to read *Sa Dānam - Sya Dānam*. Slowly and steadily with the help of the deciphered letters he recognised in other places and gradually added on more and more letters to his deciphered list and ultimately succeeded to identify the entire *Brāhmī* alphabet. He examined the correctness of his readings by cross-checking them with the Aśokan inscription on the Delhi pillar.[8]

Study of Shell Script :

Again the credit of noticing the Shell script or Śaṅkhalipi way back in 1836, goes to James Prinsep. These shell characters were found on the stem of a Brass trident from Barahat (dt. Uttara Kasi, U.P.). Again two short inscriptions from Nagarjuni group of caves, Barabar Hill, Gaya, in the Shell characters were noted[10] by Prinsep as "illegible and in a rude style of writing." Prinsep again noticed in 1837, this time carefully on the famous Allahabad Pillar Inscription of Samudragupta, "an anamolous flourish which I before mistook for a peculiar writing is apparently merely a series[11] of ill-drawn Shanks or Shells". Ultimately it was left to Prof. B. N. Mukherjee to unravel these inscriptions in a systematic method.[12]

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JAMES PRINSEP AND THE INDIAN NUMISMATICS

Sanjay Garg

James Prinsep's association with the coin was two-fold. Professionally he was a part of its minting, while academically he was head and soul into unravelling its glorious past. In both the spheres, he has left his indelible imprint.

Throughout his career in India, spanning over nineteen years, James Prinsep was successively employed in the Mint Department of the East India Company. He began his career in 1819 at the Calcutta Mint, whence within a year he was shifted to Benaras. Later, when the mint at Benaras was abolished in 1830, he was recalled to the Calcutta Mint where he remained till 1838, when his terminal illness compelled him to sail for home.

Incidentally, Princep's career in the Mint was more by way of default than by choice. At the age of fifteen, Prinsep started studies in architecture, with a view to take it up as a career. However, his sight suffered badly from the sustained pressure of mechanical and other drawings which he diligently undertook. Though his sight was completely restored by medical treatment, the prospects of choosing architecture as a career faded away.

With one door shut, another opened up. Incidentally Prinsep also had the genes of a coiner in his blood. His father John had the privilege of producing copper coins for the Bengal Presidency, at his private mint set up at Falta, near Calcutta. It was suggested to John that James might find an opening in the East India Company's ever-increasing minting activities in India. With this aim in view, James was enrolled as an Apprentice in the Royal Mint, London where he received training in assay under Mr. Bingley, the Assay Master. After receiving a Certificate of Proficiency from the Royal Mint, it was not difficult for James to obtain an appointment in an Indian Mint, which eventually he did through the good offices of Mr. Patterson, a Director in the Company's Court of Directors.

Armed with a Covenant of Appointment as the Assistant Assay Master at the Calcutta Mint, James, aged twenty, along with his younger brother Thomas, sailed for India in the ship *Hooghly*. They arrived at Calcutta on Saturday the 18th September, 1819.[1]

Prinsep as the Reformer of the Coinage :

Prinsep 1st term at the Calcutta Mint (1819-20) :

By a Resolution dated 24 September,

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1819, the Governor-General appointed James Prinsep the Assistant to the Assay Master at the Calcutta Mint on a monthly salary of Rs. 600. Accordingly, James took up his assignment under Dr. H. H. Wilson who was then the Assay Master.

By the same Resolution, Dr. Wilson was to be deputed to organize the affairs of the Benaras Mint which were in a disarray. However the deputation of Dr. Wilson was postponed, "until Mr. Prinsep shall have had the advantage of acting under him for some time, and of benefiting from his experience."[2]

James proved to be a fast learner. Within a couple of months Dr. Wilson proceeded to his appointment as the Assay Master of the Benaras Mint. Even in the absence of any supervisor, James successfully executed all assay required in what was then the biggest mint in India.

Once the affairs of the Benaras Mint were put on a sound footing, Dr. Wilson was recalled to Calcutta, and his young Assistant at Calcutta was nominated to succeed him as the Assay Master of the Benaras Mint.

Prinsep at the Benaras Mint (1820-30) :

On 8 September 1820 Prinsep was appointed as the Assay Master at the Benaras Mint.[3] His salary was now doubled to Rs. 1200 per month. Prinsep arrived at Benaras in Ocotber and assumed the charge of the Assay Master and of the office of the Secretary of the Benaras Mint Committee.

Before James Prinsep reached Benaras, the foundations of a new Mint, with official residences for both Mint and Assay Masters, were laid, and some progress had been made in the construction of the building. The style of bare walls, without the slightest decorative ornament, offended the taste of the young Assay Master, and his first effort was directed towards the improvement of architectural design and the edifice of the building which was to be his office and residence for the next ten years. He submitted his amended plans to the Military Board at Calcutta, and completed them at the estimated cost of the original design.

Having made his mark in the architecture, Prinsep demonstrated his talent in the mechanics. For the purpose of the assay, he prepared with his own hands, a balance of such accuracy as to indicate the three-thousandth part of a grain !! This balance, when he left India in his last illness in 1838, was purchased by the Government, for use at the Calcutta Mint.

While at Benaras, Prinsep devoted most of his time in the Mint pursuing scientific studies for improving the assaying and the minting techniques. Assured of the capabilities of the young Assay Master, the Government, in 1826, transferred the superintendence of the Benaras Mint from the Board of Control in the Central Provinces to a Local Committee, and appointed him as its Secretary.

At the end of 1829, the mint of Benaras was abolished. It was finally winded up in January 1830 and Prinsep was recalled to Calcutta.

Prinsep's 2nd term at the Calcutta Mint (1830-38) :

When Prinsep returned to Calcutta in

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February 1830, the construction of the building of the new Mint at the Clive Street was already complete. This Mint was coming up as the largest mint in India, and with its large machinery imported from England, it resembled a factory. Prinsep was now appointed as Deputy Assay Master in the Calcutta Mint, at the monthly salary of Rs. 1,000. Here once again, he was united with his old superior, Dr. Wilson. Two years later, in 1832, when Dr. Wilson was appointed as the Boden Professor of Sanskrit at the Oxford University, Prinsep succeeded him as Assay Master and the Secretary to the Calcutta Mint Committee.

As a Assay Master, Prinsep's greatest contribution was in the field of Currency reforms. He was the architect not only of the buildings, bridges and canals, but also of the Uniform Coinage introduced into a greater part of India.

The decline of the Mughal empire had resulted in the mushrooming of a large number of mints throughout the country. These mints produced debased coins of varying weights and differing values. Thus,

"In 1773, there were circulating in various parts of India 139 kinds of gold *mohurs*, 61 kinds of *huns* or *pagodas*, 556 kinds of silver rupees, besides 214 kinds of foreign coins."[4]

As this anomaly affected the day to day transactions, it gave birth to a number of malpractices such as *batta* or the discount charged on exchange, high rates of interests, etc. The task, therefore, of evolving good money out of the bad money fell upon the shoulders of the East India Company, who had in the meantime, succeeded to the empire of the Mughals in India.

Prinsep studied the coinage system of India through the ages and concluded that in order to affect any change in the existing monetary system, the first step is a change in its metrology. During this time the weights throughout the country were expressed in terms of the principal coin and thus *ser* and *man* were simply the multiples of the principal coin current in that area. In Bengal two systems of weights were prevalent. First was the Factory weight, based on the English avoirdupois pound system, while the second, called the Bazar or the Sikka weight, was based on the Murshidabad rupee. Prinsep was aware that any change in the weight system was not a easy task. He writes :

"However desirable it may be, in theory, to reduce the system of weights throughout the vast continent of India to order and uniformity; in practice, it is well known that insuperable difficulties oppose the execution of such a project."

To start with, such a change required a corresponding adjustment in all the weights in use at the Mint, the Custom House, the Treasury, the banks, Collector's offices, and a number of other Government offices.

Undeterred by the apparent difficulties, Prinsep, in 1833, prepared and submitted to the Government, a project for reforming weights and measures. By his mathematical calculations and statistical analysis, he successfully demonstrated that only by a slight modification in the Sicca weight, it could be adopted as the standard unit for the weights

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as well as for the new rupee coins.

Prinsep's plan was approved by William Bentinck. Accordingly, by the Regulation VII of 1833, the weight of the Farrukhabad rupee — one of the principal coins of the northern India, was fixed at 180 grains troy, corresponding to the traditional Indian weight for the silver rupee, *i.e.* one *tola* of 12 *mashas*. This coin was then adopted as the unit of a general system of weights for Government transactions throughout India.

At the same time, by this alteration in the weight, the Farrukhabad rupee was also assimilated to the weights of the Surat rupee and the Arcot rupee — principal coins of the Bombay and the Madras Presidency respectively. Now all the three Presidencies of the East India Company had their principal coins of the Uniform Weight. A Uniform Coinage was a *fait accompli.*

Prinsep at the same time was also convinced that such a wide ranging change touching almost every aspect of the public life, cannot be affected by force. Thus we find that the said Regulation expressly avoided any penal provision for default. He was sure that :

".....the sense of public convenience would quickly ensure its substitution for the irregular system now prevalent."[5]

The Uniformity of Coinage thus achieved, the next target for Prinsep was the introduction of a Universal Coinage. The Charter Act of 1833, which came into effect from 22 April, 1834, had given the Government of India wide ranging powers. The Governor-General of Bengal now became the Governor General of India. He was now empowered to legislate without seeking the prior approval of the Parliament.

Having made the Mughal Emperor its pensioner, the East India Company had been, for a very long time, contemplating to alter the device of the coins issued from its mints. In 1834, Prinsep had submitted various designs sketched by him as a prototype for the new coinage. He even got a few specimens engraved through his Indian die-cutter, Kashi nath. However, no final decision had been taken so far.

In January 1835, Prisep submitted to the Government a lengthy Note entitled, "REASONS FOR REFORMING CURRENCY" which is now preserved in National Archives of India. In this Note, Prinsep has put up a strong case for the immediate change in the device of the Company's rupee. As for the expediency for such a change, he writes :

"The sovereignty of the King of England over India has now been broadly declared and promulgated over the world, after which to continue striking coins with the unmeaning distich of Shah Alum is ridiculous, if it be not lese [sic. less]"[6]

The argument had the desired result. The change of device for the new Company Rupee was approved and subsequently established by Act XVII of 1835.

The monetary unification of the British India was complete.

The introduction of a uniform currency increased the task of James Prinsep manifold. Now a large quantity of new coins

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were required to replace the superceded coinage. Prinsep started working incessantly. Bewteen 1 July 1835 and 25 October 1838 he personally performed 62, 816 assays or on an average 65 assays per day.[7]

The exigency of the work was to prove fatal for his health.

Prinsep as Numismatist :

Prinsep's association with the coin was not merely confined to improving its role as currency; he also made a significant contribution towards its study as one of the most authentic sources of history.

Prinsep's foray into the study of ancient coins can be traced back to 1831, when he assisted his master Dr. H. H. Wilson who was studying certain coins from the Mackenzie's collection which had come to the Asiatic Society. Prinsep superintended the engraving of the coins and delineated and engraved many of them himself. Wilson's paper was published in 1832 in the *Asiatic Researches*.

The most important consequence of the publication of this paper was that it kindled in the inquisitive mind of Prinsep, a zealous interest in the study of Indian History in general and numismatics, epigraphy and palaeography in particular. In the same year (1832) Prinsep independently studied the Roman coins in the cabinet of the Asiatic Society and published an article, his first in Numismatics, in the first issue of the *Journal of the Asiatic Society of Bengal*, of which he was now the editor.[8] Next year he presented his studies on the Greek coins also in the collection of the Asiatic Society[9].

The first half of the 19th century, especially the twin decades of 1830s and 1840s, was a defining period in Indian historical research. This was an era of discoveries of coins, inscriptions and other objects of historical interest. Notices of these finds were often communicated to the Asiatic Society of Bengal, where James Prinsep studied them with great interest. In 1833, James Prinsep studied and published two articles on the coins collected by Alexander Burnes during his travels in the Afghan country.[10] In the same year he studied the Bactrian and the Indo-Scythian coins collected by Dr. Swiney at Karnal.[11] As more and more coins continued to be discovered. Prinsep's job became more and more arduous. He writes :

"My task increases upon me daily; but I shall be amply rewarded it my humble notice of the discoveries of others shall, by connecting them with ancient history, eventually turn most interesting relics to the true end of numismatic study."[12]

Little did James Prinsep expect the windfall of coins that was to follow. In 1833, Gen. Ventura — a French officer in the service of Maharaja Ranjit Singh, offered his entire collection of coins to James Prinsep. The only request he made was that Prinsep would favour him with a French translation of any description that he might publish. Prinsep was over-whelmed. He writes :

"In acknowledging this unexpected and most disinterested offer, I could not but disclaim all permanent interest in the relics and request M. Ventura to consider them still at his disposal, although I should be proud, whilst they were deposited in my care, to

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do my utmost in making them more fully known to the world."[13]

Later, James Prinsep agreed to retain one or two specimen of such of the coins as were in any number. Two Memoirs devoted to Gen. Ventura's collection were published by James Prinsep in 1834.[14]

In the same year, Prinsep published a Note on the coin collection of Capt. Court, another officer of Ranjit Singh's army, discovered by him at various places in Punjab and Afghanistan.[15] Another collection of coins discovered by Gen. Ventura since his last dispatch was sent to James Prinsep through Gen. Allard. A classified list of this collection was published by Prinsep in 1833, and a more particular notice, with engravings in individual coins, in the following year.

In April 1834, an account of the discoveries made by Charles Masson in Afghanistan was published in the *Journal of the Asiatic Society of Bengal*. This discovery laid the foundation for James Prinsep's future researches in deciphering the unknown script found on these coins.

In the same year, the coin collections of Capt. Cautley, Superintendent, Doab Canal, Lieut. A. Conolly, Dr. Swiney, Sheikh Karamat Ali, Political Agent at Kabul, Mohun Lall, an Assistant of Lieut. Burnes, and Dr. Gerard, totaling several hundred pieces, came to be deposited in the Asiatic Society of Bengal. James Prinsep, through his careful and meticulous studies, examined these material and produced the results in the pages of the 1835 issue of the Society's Journal. About the ingenuity and labour of James Prinsep in analysing this wonderful raw material for history, Dr. H. H. Wilson has observed :

".....Acquisitions which might have lingered on unnoticed and unprofitable for an indefinite period, had not the Editor of the Society's Journal [James Prinsep] been ever at hand to encourage and make known the successful exertions of all who preceded or accompanied him in numismatic research,"[16]

The numismatic writings of James Prinsep encompass Indian coins ranging from the Punch-marked coins, uninscribed cast and die-struck copper coins, the coins of the Indo-Greeks, Indo-Scythians, Indo-Parthians, Indo-Sassanians, Kushanas, Guptas, Western Kshatrapas, the post-Gupta coinage, to Islamic coins of the Caliphate series and the coins of the Sultans of Delhi.

No discussion about Prinsep's contribution to Indian Numismatics can be justified without a mention of his greatest achievement in unlocking the mystery of the two 'unknown' Indian scripts between 1834 and 1837, *i.e.* within an incredible short span of three years.

The clue, in both the cases, was provided by the coins, which Prinsep successfully steered to their logical conclusion.

First of these two 'unknown' Indian scripts, which Prinsep calls 'a type of Pehlavi', was the Kharoshṭī. Prinsep noticed it on the bilingual coins of the Indo-Greek rulers. Though some initial attempt to identify this script was earlier made by Charles Masson, it was James Prinsep who, through his diligent research unravelled its mystery.

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The second script, which Prinsep calls Indian Pāli alphabets, was the Brāhmī. Prinsep first noticed it on the Allahabad Pillar inscription. Later, with the help of the bilingual coins of Agathocles and Pantaleon bearing legends in Greek and Brāhmī, he was able to decipher it. Prinsep writes :

"Having once become possessed of the master-key of this ancient alphabet, I naturally hastened to apply it to all the doors of knowledge hitherto closed to our access."[17]

By applying this master-key, Prinsep was able to read the inscription of the Delhi column, which has baffled all attempts towards its decipherment ever since its discovery during the time of Firoz Shah Tughluq !!! Prinsep's identification of the King Piyadasi of the inscription with the Mauryan emperor Aśoka was followed by his discovery of the names of some Greek rulers in the Aśokan inscriptions.[18] This was a significant discovery which led to the establishment of the contemporarity of Aśoka with these Hellenistic rulers, and placement of Indian history, for the first time, on a secure chronological plane.

As the Egyptologists are proud of Champollion (1790-1832), who first deciphered the hieroglyphic inscription on the Rosetta Stone and provided the key to understanding ancient Egypt, the Indologists should rightfully be proud of James Prinsep's pioneering work in the antiquarian research of India.

With these words, I commend this paper to the memory of James Prinsep.

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4. Jadunath Sarkar, *Economy of the British India,* (4th ed. Calcutta, 1917), pp. 287-88.
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10. 'Note on Lieut. Burnes' Collection of Coins', (1 Plates), *Ibid.*, 310-318.
11. 'Bactrian and Indo-Scythian Coins', (1 Plate), *Ibid.*, 405-416.

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12. H. H. Wilson, *Ariana Antiqua*, (rep. Delhi, 1971), p. 9.
13. H. H. Wilson, *Ariana Antiqua*, p. 13.
14. 'On the coins and relies discovered by M. Chevalier Ventura, General in the service of Mahrajah Ranjit Singh, in the Top of Manikyala', (Pl. xxi-xxii, xxlv-xxvi), *JASB*, III (1384) pp. 313-321 and 436-456.
15. 'Note on the coins discovered by M. Court in a second Tope at Manikyala', (2 Pl.), *JASB* III (1834), pp. 562-567.
16. H. H. Wilson, *Ariana Antiqua* p. 18.
17. James Prinsep, *Eassys on Indian Antiquities*, ed. By Edward Thomas, Vol. II, (rep. Varanasi, 1971), p. 1.
18. ***Alikasundra*** = Alexander, Greek King or Epirus (272-255 B.C.), or of Corinth (252-244 B.C.); ***Antikini*** (or ***Antekina***) = Antigonus Gontas, Greek King of Macedonia (277-39 B.C.); ***Antiyoka*** = Antiochus II Theos, Greek King of the Selucid dynasty of Asia (246-161 B.C.); ***Maka*** or ***Maga*** = Magas, Greek King of Cyrene in North Africa (*ca.* 282-258 B.C.); and ***Turamaya*** or ***Tulamaya*** = Ptolemy II Philadelphos Greek King of Egypt (287-247 B.C.).

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SCIENTIFIC GENIUS OF JAMES PRINSEP

Sukumar Sarkar

James Prinsep, was gifted with multifarious talents, which he employed for the cause of the furtherance of human knowledge in diverse fields. While his contributions as a professional of the Mint, and more significantly as an antiquarian researcher are very well known, other scientific genius of his persona have received comparatively less illumination.

Prinsep was also an architect, a draughtsman, a cartographer, a chemist, a meteorologist, an astronomer, a geologist, an engineer, a naturalist, a conservator and a demographer, all squeezed into one delicate frame.

In the field of Science his contributions ranged from meteorological studies, analysis of minerals, mineral water and fossil bones, climatological studies to mechanics. He fabricated a number of instruments for his studies which included barometers, hygrometers, pluviameter, evaporometer etc.

James made significant contribution in the field of architecture and engineering too. Few know that he had received professional training as an architect and draughtsman and though he was not destined to choose architecture as his career, he commendably demonstrated his accomplishments in these skills during his decade long stay at Benaras. He improved the design of the new Mint at Benaras; constructed a Church and built a bridge over the river Karmanasa. To improve the salubrity of the Holy City, Prinsep laid an underground drainage system, which he completed in less than two years without disturbing the existing structures and without any accident to such a perfection that it still serves that city. All of these feats bear testimony to the remarkable architectural and engineering skill of James Prinsep.

At Benaras, James Prinsep prosecuted his chemical studies with much zeal and by regular communications, kept himself abreast with the latest developments taking place in Europe. His article on the measurement of heat was communicated to the Royal Society, London, of which he was also a Fellow, and was much appreciated there.

Also at Benaras, James Prinsep utilised his talents as a draughtsman, a cartographer and an engraver to make accurate drawings of the principal streets and buildings of Benaras. A selection of these drawings along with a careful and minute map of the city of Benaras — perhaps the earliest map of that city, was published in 1830 by the Baptist Mission Press, Calcutta. An original edition of this publication is available in the

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NAI Library. Recently this prized publication has been republished by Dr. Kejariwal.

In 1831, James Prinsep also presented a copy of this book to the King of Awadh, who honoured him with a presentation of *Khillat* or the Robe of Honour. The records available in the NAI reveal the unrevealed story of this episode that James Prinsep, being a Public Servant of the East India Company, was not granted permission to accept this honour.

Foreign Dept., Political Br., OC, 23 July, 1832, Nos. 5-6

Foreign Dept., Political br., OC, 8 October 1832, No. 44

Foreign Dept., Political br., OC, 30 July 1832, No. 133

Between 1827 and 1829, Prinsep undertook the work of census of the city of Benaras at his private expense and without the aid of the Public Officers of the City. He employed his own *Muharrirs* or the clerks, who recorded the notes and figures in Hindi. Prinsep utilised this data only after he personally verified its veracity. He numbered and classified the houses and householders according to locality, profession, etc. and produced the demographic results in the form of an article published in the *Asiatic Researches* in 1832. A copy of the manuscript of this article titled as 'Note on the Population of Benaras', bearing the signature of James Prinsep and the date 25 December 1829, is preserved in the NAI along with his forwarding letter addressed to his brother H. T. Prinsep.

The Note in the NAI concludes with the following paragraph, which has been omitted in its published version. It reflects the genuine concern of James Prinsep for the ordinary people of Benaras :

"Should the present document have the power of opening to the Government of the country the means of calculating and maintaining their dues upon an equitable scale and thus of alleviating to the natives of the Holy City, the oppression and inconvenience inseparable from the levy of Town duties, where a cordon of custom house officers is empowered to search every parcel, load, carriage, which approached the Town, I shall esteem my labour amply rewarded and I shall took at the last act of my official connection with Benaras and the Committee of Local Improvements".

Home Dept., Public Br., OC, 19 January, 1830, Nos. 62-62.

Whilst a Benaras, James Prinsep in conjunction with Mons. Duvancel — a French naturalist, and some other enthusiasts devoted to various branches of scientific research established a Literary Institution and set up his own press for printing its proceedings.

James Prinsep returned to Calcutta in 1830 and was immediately entrusted with the responsibility of completing the unfinished task of superintending the construction of a canal extending from Hoogly, *via* Salt Water Lake, to the Sunderbans. This work was earlier being carried out by his younger brother Capt. Thomas Prinsep who died in an accident at the age of thirty earlier that year. James Prinsep, as the Superintendent of Canals completed the task to the complete satisfaction of the government.

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The locks designed and built by him in the midst of the quick-sands, are the testimony of highly a skillful piece of engineering.

Another assignment given to Prinsep in 1830 in his capacity as the Superintendent of Canals was to set up a marble statue of Warren Hastings in the vestibule of the Town-hall of Calcutta. How James once again employed his architectural talents and gave a complete face lift to the vestibule and the pavement housing the statue, are all reflected in the records in NAI.

In one such interesting document, Prinsep gives us the rates of cutting, polishing and laying of the marble slabs as 'Rs. 1/8 per sq. of 4 ft.'

Home Dept., Public Br., OC, 12 August, 1830, No. 35

Home Dept., Public Br., OC, 9 November 1830, Nos. 63

Home Dept., Public Br., OC, 26 April 1831, Nos. 15-16

Home Dept., Public Br., OC, 17 May, 1831, Nos. 27-28.

Home Dept., Public Br., OC, 10 July, 1832, Nos. 30-31

In 1830 itself, Prinsep took over the responsibility of editing and publishing the monthly journal *Gleanings of Science* started a year ago by Capt. J. D. Herbert. Under James the journal assumed a new character and soon rivaled with other scientific periodicals of Europe. After succeeding Dr. H. H. Wilson as the Secretary of the Asiatic Society of Bengal in 1832, Prinsep changed the name of the *Gleanings* to that of the *Journal of the Asiatic Society of Bengal* and took over its editorship.

From the records in the NAI, we also learn that in 1833 Prinsep's name was even recommended for the post of Secretary of the Committee of the Public Instruction, which eventually went to C. C. Sutherland.

Home Dept., Public Br., OC, 29 January 1833, Nos. 33-34

In 1832, Prinsep, along with Sir Edward Ryan, George Swinton, Major Benson, Capt., J. D. Herbert and Dr. Turmbull Christie, formed an Indian Committee of the British Association for the Promotion of Science. Among the various branches of science that this Committee was to promote and investigate, was the Science of Meteorology. James Prinsep took over as the Secretary while Sir Ryan was elected as the President of this Committee. The NAI has a letter dated 22 December 1832 written by James Prinsep as "Junior Member and Secretary" of this Committee, to the Government of India requesting that the barometer, thermometer and other such meteorological instruments lying in the store of the Surveyor General's office, which are not immediately required for any public purpose, may be lent to his Committee. The permission for the loan of the instruments was granted but by the time these orders were communicated to Sir George Everest, the then Surveyor General of India, these instruments had been sent for use in the Upper Provinces.

Home Dept., Public Br., OC, 18 December 1832, Nos. 39-40

Home Dept., Public Br., OC, 27 December, 1832, No. 12

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In spite of all the labours and pressure of work, both in his professional as well as in individual capacities, Prinsep enjoyed a good health till late in his life. In an official letter dated 12 February 1838, addressed to his brother H. T. Prinsep, James has written :

"I have now been eighteen years in the service, and have fortunately on no occasion been under the necessity of seeking indulgence of leave of absence for a day on account of ill health....."

Home Dept., Public Br., OC, 25 July, 1838, No. 2

The illness, it seems, had caught James unaware. Within a few months of writing this letter, he started suffering from headaches and sickness, which were at first diagnosed to be a bilious affection but soon discovered to be an affection of the brain. His health deteriorated rapidly and on 1 November 1838 we find him writing to Sir Edward Ryan, now the President of the Asiatic Society :

"Being compelled by ill health to proceed to sea and eventually to Europe, I have taken my passage on board the 'Herefordshire', with the intention of being absent from the country for two or perhaps three years..... the disability of sickness is an accident to which we are all liable, and from which there is no recourse. But in temporary departure to a better climate."

Journal of the Asiatic Society of Bengal, Dec. 1838

A few days later, Prinsep sailed for home as the only hope left of recovery. He arrived in England in a hopeless condition, and after lingering for over a year, died on 22 April 1840.

James Prinsep had left behind in India his entire collection of scientific instruments and other curious specimens, in an apparent hope to resume his work on his return. He, however, never returned back to India. After his death in 1840, this collection, housed in the Asiatic Society, was sold by public auction, out of which the Society seems to have acquired : a Standard Barometer, a Comparative Barometer, an instrument for effecting correction of Atmospheric changes and a cabinet of minerals and geological specimen — all belonging to its late lamented Secretary.

A letter dated 13 November 1840 written by the Officiating Secretary of the Asiatic Society seeking funds from the government to acquire the above mentioned articles, is preserved in the collection of the NAI.

Home Dept., Public Br., OC, 18 November 1840, No. 19

As we celebrate the bi-centenary of James Prinsep it would be a befitting tribute to his genius, if, like his contributions in the field of antiquarian researches, his contributions in the field of scientific research too could find an Edward Thomas who could retrieve them from the obscure journals and compile them for a wider readership. Likewise, a compilation of his letters housed in the NAI, Asiatic Society and elsewhere, could as well be brought out which would definitely bring some yet unknown facets of the genius of James Prinsep.

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To,
G. A. Bushby Esq.
Offg. Secretary to Government
General Department

Sir,

I have the honour to acquaint you, with reference to an application which I am about to submit for the consideration of the Vice President in Council, that the "British Association for the Promotion of Science", lately established by many distinguished men of Science in England, has requested the Honourable Sir Edward Ryan, George Swinton Esq., Major Benson, Captain J. D. Herbert, Dr. Turmbell Christie and myself to form ourselves into an "Indian Committee" to cooperate in the view and objects of the institution at home, and the General Committee of the Association has pointed out among other objects which may be successfully investigated in India, the Science of Meteorology as one peculiarly fitted for our early attention.

2. All that is necessary for the prosecution of meteorological enquiry, is to obtain accurate registers of the Borometer, Thermometer and other such instruments kept at selected spots by such gentlemen as may be willing to lend their assistance for the purpose, but it will be expected that the Committee on the part of the Association provide the instruments required and these of the best description such as cannot be readily procured at this distance from Europe.

3. The Committee has learned that there are a number of Barometer and other instruments lying in the Surveyor General's Office, which are not immediately required for any public purpose.

4. I am desired therefore to submit on the part of Sir Edward Ryan President and other members, a request that the Surveyor General may be permitted to lend such of these instruments as he can conveniently spare to the Committee for the purpose above explained, with an understanding that they shall be returned as soon as a sufficient series of observations may have been completed.

5. I beg leave to bring to the notice of the Government that upon the representation of Dr. Turmbell Christie, one of the Members of the Committee, the Madras Government has

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been induced to write to England for twenty complete sets of the best meteorological instruments, and a note of instructions for their use drawn up by Dr. Christie has been already lithographed at Madras Government Press.

I have the honor to be
Sir,
Your Most Obedient,
Humble Servant

James Prinsep
Junr. Member and
Secy. of the
Indian Committee
of the
British Association

Calcutta 17th Dec.
1832

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Note on the Population of Benaras

In the year 1800 a census of the Population of this city was made by Zoolficar Ulee Kotwal under the orders of Mr. Dean, whence it appeared that there were about 30,000 houses and 6,00,000 inhabitants. Very little examination of the data upon which the latter assumption was made would have been sufficient to prove its total inaccuracy. The houses were classed according to their height, and an arbitrary rate of inhabitants affixed to each thus,

Brick houses of 1 story	were supposed to	contain	15
Do	of 2	do	20
Do	of 3	do	25
Do	of 4	do	40
Do	of 5	do	100
Do	of 6	do	150

inhabitants.

and this whole statement was of the same extravagant character.

Should the present document have the power of opening to the Government of the country the means of calculating and maintaining their dues upon an equitable scale and thus of alleviating to the natives of the Holy City, the oppression and inconvenience inseparable from the levy of Town duties, where a cordon of custom house officers is empowered to search every parcel, load, carriage, which approached the Town, I shall esteem my labour amply rewarded and I shall look at the last act of my official connection with Benaras and the Committee of Local Improvements.

James Prinsep F.R.S.
Late Secretary
Com. Impts
[Committee of Improvements]

Benaras 25th December
1829

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To,

G.A. Bushby Esq.
Acting Secretary
General Department

Sir,

In continuation of my letter dated the 20th April last, I have now the honor to submit a Bill for the price of the Marble Slabs used in paving the Vestibule of the Town Hall, which has been debited to my account in the Accountant General's Books.

The sanction of the Government to the enclosed Bill is I believe necessary to enable the Accountant General to write off the same to my credit.

I have the honor to be
Sir,
Your Most Obedient Servant

Calcutta
10th May, 1831

James Prinsep
Supdt. of Canals

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No. 363

Extract from the Proceedings of the Hon'ble the Vice President in Council in the Military Department under date the 24 December 1832.

No. 169

From Major G. Everest
Surveyor General of India

To Colonel H. Caserrent C.B.
Secretary to Government Military Deptt.

Sir,

I am favored with your letter of the 21 December. I regret to say it is out of my power at present to furnish any Barometers — all that are under my charge having been packed up and despatched to the Upper Provinces, excepting two which are actually in use in taking the Meteorological Register.

I have & c

Surver. General's Office,
22nd December, 1832

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Finance, Mint, 31 Oct., 1838, No. 3

To

C. Morley
H. T. Prinsep
J. A. Dorin
Esq.

Gentlemen,

It is with great reluctance that I have to report for the information of your Committee that I have lately been suffering from indisposition to such an extent as to incapacitate me from the performance of the duties of the Assay Office and to render it necessary that I should leave the country to restore my health. I have the honor to enclose a medical certificate for your Comm.'s satisfaction.

2. It seems essentially necessary for my recovery that I should absent myself from India for at least 18 months and it has been suggested that a sojourn at the Cape or a voyage direct to England would be most beneficial for my complaint.

3. I should prefer on many accounts the latter but I fear according to the rules of Hon'ble Company's service I should forfeit whole of my salary while absent and perhaps indeed my appointment also, although the instance of my predecessor having obtaned leave to Europe, retaining the powerver [sic. Power] or returning to his appointment leads me to hope I might be indulged to the same extent.

4. I trust that under Mr. Curnin, the duties of the office will be carried on in every way satisfactorily, but now that the manual labour of the Assay Deptt. Is so much increased an Asst. to prepare and weigh the assays is quite necessary and I would suggest respectfully that Mr. William Greenway who is now assistant in the laboratory may be advanced [to] weigh room temporarily on a salary of 300, half that of Asst. Assay Master.

5. It will be for the Comm. to suggest how the duties of Secretary to your Comm. may best be performed.

I have & ca

Assay Office
29th Oct. 1838

James Prinsep
Assay Master

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Finance, Mint. 31 Oct. 1838, No. 5

We do here by certify on honor that according to the best of our Professional Judgement after careful examination that we consider the case of James Prinsep Esq. to be of such a nature as to render a return to Europe absolutely necessary towards the recovery of his health.

J. R. Martin
Presidency Surgeon

Calcutta
October 29th
1838

J. Sawers
1st M[ember] M[edical] B[oar]d
V[eternary] Ser[vice]

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To,

G.A. Bushby Esq.
Secretary to Government in the
General Department

Sir,

In the collection of philosophical Instruments and apparatus etc. belonging to their late Secretary James Prinsep Esq. about to be sold by Public auction, there are

a Standard Barometer
a Comparative Barometer and
Instrument for effecting correction
of Atmospheric changes, and
a Cabinet of minerals and
Geological Specimens.

These the Society consider as highly desirable should be purchased for general purposes of Science, and placed in the Society's Rooms for general reference by the Public.

2. I am accordingly directed to request that you will submit for the favourable consideration of the Right Honorable the Governor-General of India in Council, the solicitation of the President and Members of the Asiatic Society to be furnished the means by the grant of funds from the Government adequate to enable the Society to effect the purchase they are so desirous of making, of the Instruments & Specimens alluded to.

3. Should His Lordship in Council be pleased to comply with this request, measures will be taken to ascertain the extent of Funds which will be requisite for the purchase, and a communication thereof made to you for the information of His Lordship in Council.

4. The Society is emboldened to submit the present solicitation as well because an occasion so favourable to enrich their collections is rare occurrence, as that the grant, if made, by His Lordship in Council, would not be disapproved by the Honorable the Court of Directors, that authority in their Dispatch No. 17 of 18th September 1839 (Para 85) communicated for information of the Society in a letter from your Department of the 26 December last, having signified their wish on the subject to the following effect

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"We shall not object to your granting to the Society Funds for special purchases as occasions arise, as far as may be compatible with a due regard to Public Economy, etc.—"

I have the honor to be, Sir,
Your Most Obedient,
Humble Servant

Asiatic Socy's Rooms
13th November
1840

H. Torrens
Offg. Secy. As. Society

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JAMES PRINSEP'S SCIENTIFIC CONTRIBUTIONS AND AN ERA (1820-1840) OF CROSS-CULTURAL KNOWLEDGE TRANSFER

Arun Kumar Biswas,

Jagatpati Sarkar

Abstract

Whereas James Prinsep (1799-1840) would always be remembered for his decipherment of the Aśokan Brāhmī script, Prinsep the scientist has been almost forgotten. An attempt has been made in this paper to highlight his scientific contributions and the era of science movement (1820-1840) to which he belonged. Prinsep was an outstanding agent of cross-cultural knowledge-transfer during his era. On the one hand, he communicated Western scientific knowledge to the East, and on the other revealed the glory and wisdom of the ancient East to the West and the whole world.

Introduction :

James Prinsep (1799-1840) would ever be remembered for his sterling contributions in the fields of Indian antiquity : numismatics, epigraphy, and above all decipherment of Aśokan Brāhmī script and several other scripts related to India's past. It would be unfortunate, however, if we fail to remember him in a wider context. He was also an engineer, a scientist, and an architect who built bridges across diverse cultures : occidental and oriental, modern science and ancient wisdom. Prinsep and many others, representing the spirits of the West and the East, belonged to a common era in which cross-cultural knowledge-transfers were initiated. Prinsep's contributions should be evaluated in this wider context.

Born on the 20th August 1799, as the seventh son of John Prinsep, James Prinsep belonged to an era in which England was expanding its frontiers of not only empire but also science and technology. Ever since the foundation of the Royal Society in the seventeenth century, England had produced outstanding physicists and chemists. During the 18th century and specially for the period 1771 to 1810, British science was decidedly superior to the achievements in any other European country[1]. John Dalton (1766-1844) propounded his chemical atomic theory

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during 1802-1803. Humphry Davy (1778-1829) worked on isolation of alkali metals, properties of halogen elements and electro-chemical theory. His assistant the famous Michael Faraday (1791-1867) was only eight year elder than James Prinsep. His work on electro-chemistry and electro-magnetic induction profoundly influenced two British scientists working in India : James Prinsep and W.B. O'Shaughnessy. In more than one of his papers Prinsep referred to Faraday's contributions.

Then there were the pioneer British engineers[2] whose examples inspired James Prinsep. He had heard of the famous civil engineer, John Smeaton (1724-1792) of Eddystone Lighthouse fame. Robert Mylne (1733-1811) and his son William Mylne (1781-1863) were great bridge-builder and water-supply expert respectively. James Hargreaves and Edward Cartwright invented mechanical weaving looms just before James Prinsep was born.

James Watt (1736-1819) developed condensing steam pump in 1774. His first rotative engine was built in 1782 for a grain mill. Orders followed for paper, textile, iron etc. The most famous of these early steam works was the Albion Mills with which John Rennie (1761-1821) was also connected. Guru William Jones was the first private engineer of the age of steam who migrated to India[3] in 1800. He established a big industrial complex (Albion Mills) near Calcutta. He was instrumental for the employment of steam power in town water supply of Calcutta and in the Srirampur Paper Mill. In England, the later career of John Rennie was largely devoted to the construction and building of canals, harbors, docks, drainage projects and bridges (such as the famous London bridge which spanned the Thames). James Prinsep drew considerable inspiration from John Rennie, Guru Jones and George Stephenson (1781-1848) who was the pioneer of early locomotives.

In India, James Prinsep was inspired by the traditon of scientific research in the Asiatick (later Asiatic) Society founded by William Jones in 1784. The principal mission of the Society was 'to inquire into Man and Nature in Asia' which encompassed not only the artistic, literary and philosophical traditions but also the scientific works that the East had undertaken. Jones earnestly hoped that from a study of Persian and Sanskrit texts on mathematics, astronomy, botany and medicine, "many valuable hints may be derived for our own (European) improvement and advantage."[4] His Second Anniversary Discourse catalogues the sorts of investigations into Indian chemistry and botany which he thinks are likely to be of benefit to Europe, but suggests that he is beginning to doubt whether Indian mathematics and astronomy — which also should be studied in depth — would have much to offer[4]. Blanpied has made an excellent review of the early scientific work which was done in the Asiatic Society.[5]

William Jones himself was more an antiquarian than a scientist, and yet he worked on Indian botany and Indian astronomy. Samuel Davis in Benares was an amateur astronomer and Sanskrit scholar;

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he worked on the 'Astronomical Computations of the Hindus'. Reuben Burrow was a more accomplished scientist and wrote papers on "Hints Relative to Friction in Mechanics" (*Asiatick Researches*, Vol. I, pp. 171-95), "A Method of Calculating the Moon's Parallaxes in Latitude and Longitude" (Vol. I, pp. 320-26), "A Proof that the Hindoos had the Binomial Theorem" (Vol. II) etc. William Roxburgh worked on the Linnaean classification of Indian plants and their medicinal values. He officially designated a species of Ashoka tree as *Jonesia Ashoka* (Vol. IV, pp. 353-55) honouring the departed pioneer William Jones. Henry T. Colebrook, President of the Society (1806-1815) wrote has famous *Sanskrit Algebra* translating Brahmagupta (8th century A.D.) and Bhaskara, and convincingly demonstrated the chronological precedence of Hindu over Arabic algebra.

Till the Calcutta Agricultural and the Calcutta Medical and Physical Societies were founded in 1820 and 1823 respectively, the Asiatic Society was the sole forum in India for discussion and publication of scientific papers. The Government officials with scientific and engineering background and working as medical men, geologists, assayers, surveyors etc. were all memebrs of the Society and made their contributions under the leaderships of William Jones, Henry Colebrook and later James Prinsep. The last-named, a young man of 20 years age arrived at India in September 1819 and stayed here for 20 years to receive the illuminating education on the cultural and scientific traditions in India and also to make his own original contributions.

The Education and the Youth of James Prinsep

Now we present some extracts from the biographical details of James Prinsep provided to us by his brother Henry T. Prinsep.[6]

James Prinsep was distinguished almost from infancy for habits of exactness and minute attention to whatever fairly attracted his mind. His productions of ingenuity and skill were retained by the members of his family as memorials of unusual talent. One such is a six inches model of a carriage, with springs and lamps complete, with doors and windows opening and shutting, and steps letting down, at will. In 1809 he went to Mr. Bullock's Seminary and acquired a taste for music from his sisters.

In view of his skill in design he was trained in 1814 as an architect by Pugin and then W. Wilkins. When his eyes were affected on account of too close application to mechanical and other drawing, he switched over to the chemical lectures of Dr. Marcet at Guy's Hospital. He was also trained by Mr. Bingley, the Assay Master of the Royal Mint, London and then came to India (September 1819) to start his professional career as the Assistant to the Assay Master of the Calcutta Mint. His supervisor was the famous Dr. Horace Hayman Wilson who was not only an expert in medicine and mint, but also a dedicated Indologist, Secretary of the Asiatic Society, a great scholar in Sanskrit and eventually became the Boden Professor of Sanskrit in the University of Oxford. Acquaintance with and inspiration from Wilson shaped Prinsep's career.

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In 1820 Prinsep proceeded to Benares and improved the architectural design of the newly founded Mint. He also built a church there. He widened the streets and for sewerage excavated an arched tunnel passing upwards from the lowest water-line of the Ganges under the seven-storied houses of the most populous parts of the town. Prinsep constructed a stone bridge with five arches of large span over the river *Karmanāśā*.

During his boat-trip over the Ganges from Calcutta to Benares, Prinsep drew many sketches of the sceneries which were retained by the members of his family. Accurate drawing of the principal streets and buildings of the Holy city of Benares were published in England under the title "Views and Illustrations of Benares". Prinsep compiled the census of the city in Hindi language and character which was hailed as 'the most careful and accurate that had up to that time been made of any city of Asia'. It was eventually published by the Asiatic Society (*Asiatic Researches*, 1832, p. 470).

Prinsep's devotion to science was earnest during his stay at Benares. He kept on reading books and journals particularly those of chemistry so as to keep pace with the progress of science in Europe. He wrote a paper on the measurement of heat "pyrometric measurement of temparature" which was acclaimed and published in the Transactions of the Royal Society in London. Subsequently, Prinsep became a Fellow of the Royal Society. He instituted Benares Corresponding Society, a literary institution and set up a press for the purpose of printing the proceedings of this society. Extracts from the Proceedings were published in *Asiatic Researches*[7]. These included a report on the measurement of latitude of the Hindu Observatory at Benares, description of a pluviameter and an evaporometer constructed at Benares (Figure I) etc. Prinsep also contributed to the new journal in Calcutta : *Gleanings in Science* instituted by Major Herbert, a scientific officer of the Company's army.

At the end of 1830, the Mint of Benares was abolished, and Prinsep was recalled to Calcutta Mint to assist his mentor Dr. Wilson, who introduced him to Oriental studies, the Asiatic Society and various educational institutions of the city. Prinsep exhibited his engineering skill at Calcutta also. He completed the construction of the canal in the Sunderban area linking the river Hooghly with the eastern districts of Bengal. The locks, built by him in the midst of a soil of quicksands, upon a principle of his own devising, were regarded as a highly skilful piece of engineering. In the Asiatic Society he introduced the tradition of well-executed lithographs and engravings which improved the quality of the journal.

In his capacity of an Assay Master, James Prinsep submitted in 1833 his project for reforming weights and measures which received the approval of Lord Bentinck. Uniform coinage was introduced. The Company's rupee was to be of the weight of 180 grains, including 15 of alloy. In 1835, a coinage of fifty millions of pieces in one year entirely replaced the old sicca currency

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of Bengal. In mechanics, James Prinsep's skill was remarkable. He prepared with his own hands, for purposes of assay, a balance ('Accurate Balances', *Gleanings in Science*, July 1831, pp. 218-223) of such delicacy as to indicate the three thousandth part of a grain. When he left India in 1838 during his last illness the Government purchased the balance for use in the Mint of Calcutta.

In 1831, Major Herbert left Calcutta to become the Astronomer of the Kingdom of Oudh, and James Prinsep took over the management of the *Gleanings of Science*. He opened communications with most scientific men of India and the quality of the journal was raised so as to rival publications of the same character in Europe. No pecuniary gain was intended and the soul aim was the promotion of science. In 1832, the events moved even faster. Dr. Wilson was appointed to the Boden Professorship of Sanskrit in the University of Oxford, and now the mentor gladly passed over the various responsibilities to Prinsep who became the Assay Master, the Secretary to the Mint Committee, the Secretary of the Asiatic Society and additionally substituted Wilson in the Committee of Education ! At Prinsep's suggestion, *Gleanings of Science* was incorporated in the Society starting from March 1832 under the title *'Journal of the Asiatic Society'*.

1832 onwards James Prinsep became deeply involved in the studies of the antiquities of India : numismatics, epigraphy, deciphering of ancient inscriptions on pillars, monoliths, rocks and buildings. As we know he climaxed his career by deciphering the Aśokan Brāhmī srcipt. This very important topic is outside the purview of our paper.

It is unfortunate that James Prinsep's scientific works have not been reviewed. Blanpied's excellent review[5] does not cover Prinsep's scientific work. Kejariwal has reviewed Prinsep's monumental work in the area of Indian antiquity[8] but not his contributions in the area of science and technology. Edward Thomas's two volumes[6] also suffer from the same defect. Therein James Prinsep's brother Henry writes in his memoir[6] that he would not 'weary the reader' by describing the scientific contributions of James for which one can 'refer to the seven volumes of the Journal, from 1832 to 1838 inclusive'. Even Henry, his brother overlooked that James had made useful scientific contributions in 1825 as well ![7]

James Prinsep's scientific contributions

James Prinsep conducted his scientific experiments even while he was on his maiden voyage from England to India in 1819. His brother George had measured saltness or specific gravity and temperature of the oceans all over the world, and now James was to collect supplementary data which he did near Cape of Good Hope, near the mouth of Cuttack river etc. A summary of the results was communicated to Dr. Marcet of the Royal Society (who had earlier taught the brothers) in 1823 and subsequently published in 1825 in the pages of the *Asiatic Researches*[7]. James noted in August 1819 how 100 miles south of the Cape, the S.E. hot current 'elevated the thermometer rapidly from 57° to 63.5° F. The

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specific gravity of sea-water was remarkably uniform 1.0271 ± 0.0016. George verified Humphry Davy's assertion of a drop in surface temperature of the sea-water by 1-2°F during night. James measured the specific gravity in front of the Orissa rivers to be lower (1.016 to 1.0194) and suggested that this phenomenon could be used by the navigators to guess their proximity to the mouths of the rivers.

James Prinsep did not pursue this subject, but his brother George did, since he was an indefatigable navigator and he had a great fascination for this subject. George reported 350 observations of temperature and saltness each at different points (and at different time of the year) on the river Hooghly from Calcutta to the sea[9]. The specific gravity values were maximum during May before monsoon : 1.0091 at Falta and 1.0225 at Ganga Sagar and minimum after monsoon. The temperature of the river was found to exceed the atmospheric temperature. The reverse was expected as in the rivers of England. The extraordinary phenomenon was attributed to 'the power of the sun and high humidity which reduced the influence of evaporation'. In 1837 George was associated with manufacture of salt in the salt-water lakes east of Calcutta and carefully measured and observed 'a high degree of temperature at the bottom of the brine reservoirs'. For this work he fabricated a special sampling equipment made of bamboo. He could not offer any plausible explanation for this observed phenomenon.[10]

James Prinsep started his own engineering and scientific work in Benares 1820 onwards. Along with his survey and civil engineering constructional work, he undertook many meteorological measurements[7]. Atmospheric pressure was measured during 1821-1823 on different dates and time of a particular day by Dollond Barometer in consultation with Captain Herbert's Survey Office at Calcutta. Comparing the barometric heights at two places and reducing the values at 32°F, relative difference in altitude could be calculated. Thus Prinsep computed the 'barometric altitude of Benares to be 246.75 ft. above Chowringhee'. Performing similar calculations, Captain Herbert gave the height of Kanpur to be 133.3 ft. above Benares.

For temperature measurements, several thermometers were used and compared with Dollond's instrument divided to fifths of a degree. Prinsep measured wet-bulb temperature and through hygrometric calculation computed relative humidity. He constructed his own evaporometer and pluviameter (Fig. I) the latter registering the rain-fall at Benares[7]. The huge amount of data were summarised in beautiful tables. Prinsep analysed mineral water of Benares determining the contents of NaCl, $NaNO_3$, KNO_3 and $MgCl_2$. The last one was 'determined with much care since, to it may be attributed the purgative qualities of this water.'[7]

The meteorological data of Benares were published in the *Proceedings* of the Benares Corresponding Society in 1823 (republished in the *Asiatick Researches* 1825).

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James Prinsep collaborated with William Cracroft in November 1823 to determine the latitude (and also longitude) of the Hindu Observatory at Benares. The Hindu Books of Astronomy provided the value of latitude as 25°36′. Capt Hodgson reported 25°22′38′′ in the 14th volume of the *Asiatick Researches* which was 4 minutes different from the earlier measurement of Reuben Burrow : 25° 18′36′′N. Whereas Cracroft fixed his Troughton's Circle in the centre of the observatory and collected meridional altitudes of α-Orionis, Polaris, Sirius etc., Prinsep took his measurements at Secrole. Their results [7] confirmed the earlier value of Reuben Burrow. For longitude, the eclipses of Jupiter's satellites were watched and the value for Mān Mandir was computed to be 82° 55′52′′ East of Greenwich.[7] In the same paper, Prinsep reported transit of Mercury over the sun's disc on the 4th November 1822 as telescopically recorded at Calcutta, Meerut, Karnal etc. From the exact timings and the known value of longitude at Calcutta 5hr. 53m. 47.1 s. east of Greenwich, the corresponding values at Meerut (5 hr. 11m. 51.4s) and Karnal (5hr. 08m. 42.5s.) were computed. Later, on the 5th of May 1832 (this time in Calcutta), James Prinsep teamed up with two engineers : Waugh and Rennie to observe the expected transit of Mercury over the sun's disc through a very fine 4 feet achromatic telescope but unfortunately the observations were marred by cloudiness of the day.[11] In the 1832 Volume of the *Asiatic Researches* (p. 470) James Prinsep published his earlier work on the census of population of Benares.

In 1833 Prinsep communicated a large number of scientific papers to the *Journal of the Asiatic Society*. In the April issue he advised the readers how to ascertain the heights of mountains from the boiling point of water.[12] Prinsep began by explaining that 'boiling point is that degree of heat at which the elastic force of aqueous vapour is just capable of counterpoising the pressure of the atmosphere, which is a function of the elevation or altitude.' Prinsep reviewed the experimental works of Dalton, Watt, Dulong etc. regarding measurement of pressure of steam at different temperatures. He specifically mentioned the experiments of Dulong etc. in 1829 sponsored by a Commission of the French Academie and their efforts for mathematical correlation of the data. Measurements up to 435°F or a pressure of 24 atmospheres were made on a column of mercury sixty feet high in a glass tube attached to the tower of the Old Church of Sainte Geneviéve. "The scientists were afraid of passing this limit as the least explosion would have brought down the tottering fabric" !

For the top of the mountains however, we are concerned about pressure less than one atmosphere or 30 inches of mercury and temperature less than 212°F. The experimental data suggested (according to Prinsep) the following equation :

$f=\left(\frac{t+100}{177}\right)^6$ where t represents temperature and f the elastic force or the pressure.

Prinsep showed some typical calculation such as 185°F boiling point of water corresponding to an elevation of 15763 ft. after proper temperature corrections were

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made. He also referred to Rev. F. J. H. Wollaston's use of thermometer in 1817-1820 'practically as a substitute for the barometer in measuring heights'. His table in the range 214° to 202°F covered an altitude of 5405 feet which was, as Prinsep humorously remarked, 'evidently quite insufficient for the traveller in India, who may ascend to 18000 feet and still see the *snowdons* towering above his head'! At the end, Prinsep suggested that scientifically minded tourists may carry with them barometers, note the changing pressure, 'carefully note the heat (boiling point) of his boiling tea-kettle every morning', record the data and correlate, and 'through this synthetical research render an essential service to physics'![12]

In May 1833 Prinsep drew attention to the fact that comparison of the barometric data at two stations can be made only after appropriate temperature corrections, by converting the values to the same temperature such as 32°F. This difficulty was circumvented by Prinsep through the construction of a compensation barometer in which a compensation tube was attached for temperature correction and adjustment of the index point. Prinsep provided sketches (Fig. II) of his Compensation Barometer and Wollaston's Thermometric Barometer.[13] Prinsep also pointed out in this paper that the barometric data need to be subjected to temperature correction on another count; expansion/contraction of mercury and glass. For glass, hygroscopicity is still another factor. He endorsed Michael Faraday's idea that borax glass should be used in manufacturing barometers so that the problem of moisture absorption is reduced.[13]

In May 1833 while Prinsep was emphasizing on the importance of barometric measurements, Nature readily confirmed it through the extraordinary gale on the 21st. Prinsep himself noted a drop in the pressure by three quarters of an inch. At saugor it was nearly two inches. Prinsep reported[14] an extract from the register of the barometer kept on board the H. C. Ship *Duke of York*, one of the numerous vessels wrecked or stranded along the Hijli coast. While the barometer stood at 29.09 inches at 8 A.M. that day, three hours later it was below 26.50 inches. "There was no mercury in sight in the tube. As the mercury disappeared, the oil in the sympiesometer retired completely in the bulb giving a terrible proof of the storm."[14]

For three years (1833-1836), Prinsep compiled barometric data from different parts of India[15,16], and the devastating storms were always the focus of his scientific, and even poetic attention :

"Any who have witnessed the gathering of a north-wester during the calm serenity of a sultry evening, and have watched the turbulence of the clouds and commixture of upper currents prior to the sudden and furious generation of the whirlwind below, will be prepared to consider the hurricanes and gales of longer duration as equally insulated in their origin, only upon a much larger scale of operation.

"A sudden condensation of aqueous, or perhaps of gaseous matter, whether by electricity or simple cold, would, by

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drawing upwards towards the vacuous space, the under air, cause a fall in the barometer as certainly as if there were an absolute removal of superincumbent weight, for which there would be no mode of accounting; and this upward current could not take effect without the production of a horizontal current of corresponding degree and velocity."[16]

The compilation of the huge barometric data from different sources in India was really fabulous. Prinsep demonstrated the efficacy of graphical presentation of tubulated data.[16] He demonstrated 'almost perfect parallelism in the march of the barometer' at Calcutta, Bankura, Muzaffarpur, Kanpur, Nepal and Simla—'places situated many hundred miles asunder' with different latitudes, longitudes, winds, geographical features. This indicated a common 'climate zone' over a large area. South India showed a different pattern of barometric data. There was the necessity of maintaining meteorological registers all over India since 'the Government has (had) so much to learn of the physical geography of its vast territories'.[16]

James Prinsep made some experiments on wet-bulb hygrometer and in this connection measured specific heats of oxygen and common air. Similarity of the values led him to the conclusion that specific heat of azote (nitrogen) must also be very similar.[17]

Prinsep had a penchant for basic measurements towards the solutions of practical problems. He devised equipments for accurate measurements of pressure, temperature, humidity, weight (for chemical analysis), specific heat and then thermal coefficient (he used the term 'constant') for linear expansion of metals.[18] Prinsep had earlier determined expansion of 25 feet iron bar and also of brass and lead under heat, and reported the results in *Gleanings of Science*, December 1831. In 1832 he improved his experimental apparatus (Fig. III) for more accurate determinations on 10′ feet iron bar of the Great Trigonometrical Survey of India to assist the survey work of Major Everest. His apparatus was a steam-heated double cylinder, the inner cylinder being made of copper and the outer case of tin. The experimental rod was put in the inner cylinder and steam was admitted from a small engine of the Government Mint into the annular space. Two micrometer—microscopes were used for accurate measurements of the dilatations. Wilcox and Barrow assisted James Prinsep in his experiments performed in November 1832. When the standard 10′ feet bar of iron was considered to have *unit* length at 32°F, the dimension at 212°F was found be 1.001215, a value very close to the earlier measurements of Lavoisier and Smeaton. The corresponding values measured (by Prinsep) for other metals were :

Gold nearly pure 10′ feet long rolled hard and annealed ...	1.001438
Copper Sheet annealed	1.001691
Silver containing one-twelfth alloy rolled hard and annealed ...	1.001904
Brass wire-drawn, annealed 25′ ft.	1.001906
Lead one inch pipe 25′ ft. ...	1.002954

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Silver and brass have very different fusibility and yet were found to have similar coefficient of linear expansion. This 'permits the application of divided circles made of silver to astronomical instruments made of brass.'

Prinsep reported the examination of minerals sent by Major H. Burney from Ava (Burma or Myanmar)[19] : asbestos, mica, gypsum, hornblende, metallic minerals such as malachite, manganese oxide, iron oxide, galena, litharge (containing not only lead but also antimony and copper) etc. Platina in the gold dust from the river Iravati containing Pt. Ir etc. was also reported.[20] Analysis of copper ore from Nellore, South India was reported by Prinsep[21] in 1835. In 1838 a comprehensive report of the Coal Committee was published. This tabulated the properties and compositions of Indian coals obtained from various localities.[22] James Prinsep reported fossil bones from the valleys of Narmada, Jamuna rivers.[23-25] Chemical analysis of water, soil etc. were regularly published.[26]

Prinsep played a major role in the mechanisation of the Mints at Benares and Calcutta. The machinery installed in the Strand Road Mint of Calcutta in 1829 was of the type used in the Royal Mint in London. Steam-powered engines were commissioned. In February 1834, the Mint could produce 30000 silver coins in daily shift of seven hours. Coins with plain edges 'but with a collar' had been introduced in 1832.

At the request of the Government, James Prinsep undertook a series of experiments on the preservation of iron sheet from rust while half-immersed or fully immersed under water. While reporting the results Prinsep made the following introductory remarks : "The proposed intensive employment of iron steam-boats for the navigation of the Ganges, rendered it a desideratum to ascertain what varnish or composition would best preserve the exterior surface of such vessels from the rapid corrosion to which iron is so peculiarly subject in a hot climate".[27]

Prinsep found that wrought-iron plates could be protected in Circular Canal water for three months best when coated by common coal-tar under hot condition, better than when other kinds of coat such as white lead paint, coach-maker's varnish, white wax were used.[27] The failure of zinc solder was surprising since according to Faraday's notion zinc is supposed to be an 'electro-positive protector to iron'. The negative result was attributed to the zinc sample being adulterated with lead, which 'being negative with respect to iron would cause a more rapid oxidation of the latter metal'. Prinsep stated : "The impurity of the zinc was afterwards fully proved... The bituminous (coal-tar) coating was finally adopted, and it has been successfully applied to the iron steamer, the *Lord William Bentinck,* lately launched under Captain Johnston's superintendence."[27]

During 1836-1838 James Prinsep's major effort was to collate huge information of one kind and publish in the pages of *Journal of the Asiatic Society of Bengal* : in 1836 barometric readings in different parts of India,[16] in 1837 indexing the first eighteen

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volumes of the *Asiatick Researches*[28] and in 1838 the analytical data on coal from different parts of India.[22] James made all these scientific contributions while he was simultaneously engaged (1832-1838) in making history on his historical researches ! He was indeed a many-sided genius like Leonardo da Vinci.

It is a remarkable fact that James Prinsep made his monumental contributions on Indian antiquities in less than six years, July 1832 - April 1838 to be precise, the dates corresponding to this first and last communication on the subject. Even during this digression — we may call it a very welcome digression — he was in spirit and in deed a true scientist. In Cunningham's words, he converted 'scholastic archaeology' to 'field archaeology'. We may better term it as scientific archaeology. Was not the idea of collecting, collating, transcription and lithography of the facsimile of ancient inscriptions a scientific one ? The publications of these inscriptions and collaboration with field archaeologists, epigraphers, numismatists, linguists and historians led to wonderful breakthrough in the historical studies of ancient India; and at the centre of these activities was a scientist at the Asiatic Society : James Prinsep. With the steadfast attention, scrutiny and clinical eyes of a forensic scientist, he could eventually 'decipher the most difficult of inscriptions with lightning intuitions'. In the words of Vincent Smith, James Prinsep was entitled to 'rank with the men who unlocked the mysteries of the hieroglyphic and cuneiform writings and so revealed the long-lost histories of Egypt and Babylonia'.

The scientific temperament of Prinsep was manifest even in the first few papers on archaeo-materials that he published. He was aware of Mushet, Stodart and Michael Faraday's forays in the area of Indian archaeo-materials such as the enigmatic wootz steel.[29-32] Faraday had failed to solve the problem and speculated quite wrongly that the special property of the steel was due to alloying with aluminium !

During the early years of Prinsep's membership in the Asiatic Society, archaeo-materials such as precious minerals were pouring in. When Raja Kali Kishen made several presentations, Prinsep quickly teamed up with him and published a paper on the link between the Oriental and Western nomenclatures of some gem minerals.[33]

In 1834 General Ventura presented the various archaeo-materials, obtained from the Kanishka era stupa of Mānikyāla, to the Asiatic Society. James Prinsep immediately proceeded to analyse the 'brown liquid contained in the cylinders'.[34] The brown substance was chiefly composed of vegetable and a little animal matter, carbonized and blackened by age. The approximate composition was stated as : Empyreumatic oil 22 p.c., ammonia and water 19 (suggesting protein residue), carbon 18, phosphate of lime 10 (suggesting bone-ash from a dead body), insoluble silicate 9 and copper oxide 22 p.c. The yellow transparent fragments were tested by a polarizing instrument : 'in no position whatever could it be made to depolarize the polarized ray of light, a certain proof of its non-crystalline structure.' The topaz-

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coloured yellow fragments were presumably imitation gems, an alkali silicate containing substantial amounts of copper and iron. Prinsep could 'easily conceive that the caskets were intended to contain the ashes of princes or priests'. Prinsep quickly recalled that a marble urn dug up at Sarnath in Benares contained 'a few human bones, some decayed pearls, gold leaves and other jewels'. Even in England, 'the sepulchral tumuli of Essex contained, like those of the Panjab, various bronze urns, enclosing fragments of burned bones, glass, coins and even the brown liquid itself'. Prinsep went on with a very interesting remark connecting science and history: "Professor Faraday, who examined the liquids, supposes that the water was not originally placed in the urns; but that it came over by a species of distillation into the empty space of the vases, on the alternate heating and cooling of the air contained in them. The researches of M. M. Ventura and Court may give reasons for thinking the contrary."[34] Faraday and Prinsep were the pioneers in archaeological science who were not as lucky as we are in being able to use spectroscopes and electron microscopes in unravelling the mysteries of the past.

Prinsep was indefatigable in combining a scientific approach with historical studies. In 1836 one *Muallim*, who came from the Maldive islands, brought in his vessel a primitive nautical instrument of the Arabs (Fig. IV) resembling a quadrant or sextant, and showed it to James Prinsep. The great scientist-historian proceeded to study and describe[35] how this kind of instrument, a *kamāl* had been used through centuries for the determination of latitude, during navigation, through the measurements of the altitude of the polar and circumpolar stars.

Having provided some idea about James Prinsep's scientific contributions, we would now proceed to make some observations about the science movement of the era 1820-1840 which was participated and eventually led by James Prinsep.

The Science Movement of the Era (1820-1840) and James Prinsep

James Prinsep though a very young person at that time played a very crucial role during the 1820's towards a fresh movement for the scientific studies in India. William Carey had submitted a plan in June 1814 for 'instructing Indians in European science'. At the initiative of the leading Hindu citizens of Calcutta, David Hare and Ram Mohan Roy, the Hindu College was founded in 1817 with the objective of cultivation of 'the literature and *science* of Europe and Asia in *English* and *Indian languages*'. The School Book Society was also founded the same year. Ram Mohan Roy wrote books on geography in English and Bengali (*Jyagrāhī*'). In 1823, H. H. Wilson, who had been the Secretary of the Asiatic Society, was named the Visitor of the Hindu College, and as the Secretary of the General Committee of Public Instruction, he proposed translation of specific European scientific works into Indian classical languages. The same year, Ram Mohan Roy wrote his famous letter to Lord Amherst requesting him to:

"Instruct the natives of India in

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Mathematics, Natural Philosophy, Chemistry, Anatomy and other useful sciences which the nations of Europe have carried to a degree of perfection that have raised them above the inhabitants of other parts of the world".

Imbued with the same spirit, James Prinsep (whose mentor was Dr. Wilson) founded the Benares Corresponding Society, selected proceedings of which were extracted in the 1825 Volume XV of *Asiatic Researches*[7]. Presumably, this was done through the courtesy of Dr. Wilson. While at Benares, Prinsep had contact with Major James Herbert with whom he collaborated to launch an independent monthly *Gleanings in Science.*

Towards the close of 1827, several members of the Asiatic Society, who felt a keen interest in scientific enquiries and found that the Society meetings were infrequent and not too focussed on science, proposed that the Physical Committee of the Society (first formed on 7 September, 1808) be revived to regularly and frequently deliberate on papers related to geology, mineralogy, meteorology, zoology etc. The proposal was accepted in the General Body Meeting of the Society held on 2 January 1828 and some 15 papers were accepted for immediate deliberations. A few were contributed by Captain Herbert and the French naturalist Mons. Duvancel — both being close associates of James Prinsep, who was still at Benares at that time. The journal *Gleanings in Science,* the first scientific monthly of India was launched in January 1829. Dwarka nath Tagore and James Prinsep were accepted as members of the Asiatic Society in March 1829 and July 1830 respectively.

It is significant that the movement led by Prinsep and Herbert was launched during the time the Declinists in Britain were pressing their case against the British scientific establishment in general and the Royal Society in particular. Charles Babbage had argued[36] that the ameteur character of science in England had contributed to its decline *vis-a-vis* Continental science. He pointed out that the liberal requirements for membership in the Royal Society had led to a situation in which a majority of members were amateur gentlemen, in contrast with the French and Prussian academies where membership was a coveted distinction granted for outstanding scientific achievement.[36]

Herbert's editorials argued[37] that *Asiatic Researches* appeared irregularly, and that *Gleanings* would be more convenient for regular and focussed scientific papers. In Vol. II of *Gleanings* he reviewed[38] Babbage's book and suggested that the Asiatic Society suffered from many of the sins which Babbage had laid at the door of the Royal Society.

By 1830 the Benares Mint was closed, and James Prinsep came to the Calcutta Mint. He joined Herbert in the scientific discourses and journalism and started helping Wilson in the Indology studies. When Herbert retired as editor of *Gleanings* in 1831 to become Astronomer to the King of Oudh, Prinsep immediately took over, and in 1832 persuaded the Society to accept the journal as its official publication *Journal*

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of the Asiatic Society of Bengal (*JASB*). In 1837 *JASB* began publication in two sections — one scientific and the other historical and literary — Prinsep contributing in both. He had become Secretary of the Medical and Physical class of the Asiatic Society in 1830 and of the Society itself in 1833 after his mentor Dr. Wilson left India to become the Boden Professor in Sanskrit in the University of Oxford.

The activities of the Physical Committee of the Asiatic Society have been chronicled in detail.[39] The Committee of the Society was revived on 2 January 1828. Many meetings were devoted to the scientific discussions on geology of India, diamond mines of Panna, fertilizing principles of Hoogly river inundations etc. On the 27th February 1828, there were 'among the visitors at this meeting eight Hindu youths of Anglo-Indian College'. On the 24th December the same year Dr. Butter presented his paper on the origin of aerolites and mentioned that at that time only 52 elementary substances were known 'in the present state of chemistry' of which four are magnetic (Fe, Ni, Cr and Co). On the 8th April, 1829, Mr. Kyd's register of the day and night tides in the Hoogly at Kidderpore, collected over long years 1806-1828, was presented. On the 15th July, 1829, J. Tytler presented his paper on Oleocera, a kind of wax for candles prepared from castor oil hardened by nutric acid. The level of scientific discussions was raised when James Prinsep joined the Society and the Physical Committee on 7th of July 1830.

On the 27th of October 1830, E. Sterling presented the chemical analysis of turquois from Nishapur in Persia. It was reported to be essentially a copper alumino-silicate with some sulphate radical but no calcium or phosphorus.

On the 15th January 1831 a large number of mineral specimens obtained from Ava (Burma or Myanmar) and their analysis were discussed. Among the gold dust of the Ava mines had been found a button of metal assaying 25 p.c. Platina, 5 Gold, 40 Iridium & Osmium (combined), 10 Iron, 20 Lead and Arsenic (combined) and Zero Rhodium. During 1831-1832 we find many other interesting papers presented. The topics were :

artificial hydraulic cement, sandstone of India, Himalayan fossils, several varieties of Indian coal and their compositions : volatile matter, sp. gr., charcoal and ash (rather high), migration of birds from Nepal, volcanic specimens from Mount Vesuvius, salt mines of Panjab, ancient iron works of Salem and the Indian Wootz (June 1832) and so on.[39]

Evidently, this spurt of scientific discussion was greatly boosted through young James Prinsep's exuberance and enthusiasm. On the 15th of August 1832, the President of the Asiatic Society read out a letter from Rev. W. V. Harcourt, Secretary of the British Association for the advancement of Science soliciting collaboration with the Asiatic Society and specifically the enthusiasts of the Physical class such as Captain Herbert, James Prinsep etc. The quality of the publications in the *Journal of the Asiatic Society of Bengal* (*JASB*) was so enhanced that Prinsep reported in 1835 that

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the new findings published in the *JASB* were 'greedily transferred to the pages of European literary and scientific periodicals of wide established circulation'.

Concluding Remarks

In conclusion we would like to comment on three controversies which have been raised in the context of the era represented by James Prinsep : the first one with regard to the nature of the introduction of the Western Science in India, the second one relates to the Anglicist — Orientalist debate around 1835 and the third one questioning the bonafide and motive of the Orientalists.

William Blanpied has stated[5] that contemporary Indian historians have taken two different and somewhat contradictory views toward the introduction of Western Scientific institutions in India. According to the first view, Dharampal asserts that : "It appears probable that in most respects the science and technologies of India had reached a desirable balance and equilibrium much before the eighteenth century."[40] Therefore, concluded Jawaharlal Nehru, in his *Discovery of India*, that without the British intervention India would have been 'not only freer but also far more advanced in science'. We can hardly agree with the two Gandhians. Raja Rammohan Roy, who was no less patriotic than Dharampal and Nehru, honestly felt that the British administration was better than the previous Muslim rule, and he wanted Western scientific education whole-heartedly.

The other view proposed by Sen[41] is categorical that the progressive Indians themselves wanted western science, but the colonial Government was not anxious to impart scientific education to the Indians. We support this view and yet would be quick to point out that the missionaries and the Orientalists of the Asiatic Society were not as niggardly and as disrespectful to the local aspirations as the colonial Government. William Jones did not prohibit the Indians from becoming members and participating in the deliberations of the Asiatic Society. He learnt Sanskrit from Jagannath Tarkapanchanan. In the 1788 volume of the *Asiatick Researches* we find two ancient Indian documents translated by Ramalochan Pandit and Radhakant Sarman duly published. Kishen Kant Bose's article *On Bhutan* was published in 1825. Ram Kamal Sen, one of the earliest members of the Society (he was accepted even before Dwarkanath Tagore's nomination in 1829), had his paper on *'Charak Puja'* published in the 1833 volume of the *Asiatick Researches*. Raja Kali Kishen co-authored James Prinsep in the 1832 paper on precious minerals[33]. Munshi Mohan Lal was a regular writer for the Society : 'Image of Buddha at Kabul' (Proceedings 1834), 'A Brief Account of Masud' (Journal 1836), 'Kala Bagh on the Indus' (Journal 1838) etc.[42]

It is true that there were only two scientific contributions from the Indians to the Society publications till 1884, but that was because the colonial Government ignored scientific education. The Asiatic Society ignored neither India nor science. The Physical (Science) Committee of the Society was founded in 1808 and later invigorated in 1828. Dr. H. H. Wilson, the Secretary of the Society was the Visitor of

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the Hindu College founded in 1817 to 'promote in English and Indian Languages the literature and science of Europe and Asia'. Wilson submitted proposals for translating European scientific works into Arabic probably because the Muslims were not interested in English education. There was no such problem with the Hindu students. On the 27th February 1828 for example, 'there were among the visitors of the meeting (of the Physical Committee of the Asiatic Society) eight Hindu youths of Anglo-Indian College.'[39] Dr. Wilson patronised "Society for Translating European Sciences", encouraged Bengali periodicals in science such as *Vijnan Sebadhi* and inspired Amalchandra Ganguly, Kashiprasad Ghosh etc. in writing scientific books in Bengali. James Prinsep took interest in the chemistry curriculum of the Medical College. He examined the papers written by the sutdents and wrote to Dr. W. B. O'Shaughnessy, Professor of Chemistry, Medical College (later the great innovator of telegraphy in India) : "All the essays are extremely creditable ... the extent and accuracy of the information far surpassed my expectations, and I do not think that in Europe any class of chemical pupils would be found capable of passing a better examination."[43]

It is evident that James Prinsep advocated both Oriental studies as well as modern scientific studies, and this brings us to the second controversy regarding this era (1820-1840) and that is the Anglicist — Orientalist debate. We are aware of Macaulay's arrogance; he overstated his position by writing that : "A single shelf of good European library is worth the whole native literature of India and Arabia". James Prinsep sharply differed : "While we endeavour to push our own systems of instruction and science in this country, we are too apt to spurn and decry the literature, the science, and even the languages of the East, as if they were not only incapable of imparting the smallest particle of knowledge, virtue or truth, but incapable also of improvement by engrafting upon them the *new growth of Western knowledge, which has sprung ahead of the Asiatic and elder stock only within the last century or two*"[44] When the Government stopped publication of the Oriental literatures of the Asiatic Society, James Prinsep protested saying that the Government decision was 'not far outdone by the destruction of the Alexandrine library itself'. Through his protest he wanted to 'rescue our (British) national character from the stigma of so unjust, unpopular and impolitic any act'. Fortunately, Lord Bentinck was succeeded by Lord Auckland who on the advice of H. T. Prinsep, his Secretary and James's brother, reversed the government policy and promoted Oriental studies in the Asiatic Society.

James Prinsep was for oriental studies as well as scientific studies in English as well as in the Indian languages. He was not against any language or any tradition of knowledge. Macaulay on the other hand, ruled that there should be 'English only' and no oriental studies. In his arrogance he did not understand what the Orientalists of the Asiatic Society were trying to say. In his minute dated 30 April 1836 James Prinsep

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felt that English tongue must be in contact with the classic idiom of India.

Macaulay understood neither the ancient wisdom and traditions of the East nor the emergent scientific traditions in France and Germany which the then England was unable to emulate in full measure. Griffin has beautifully brought out the point that Macaulay's personal distaste for science led to a curriculum which was purely literary.[45] Hindu College had a subject 'Natural Philosophy' which included mechanics, astronomy, hydrostatics etc. In July 1835, the General Committee of Public Instruction (minus Wilson and Prinsep) recommended the abolition of the existing science professorship at the Hindu College and discontinued the instruction of chemistry there. Rammohan Roy and James Prinsep on the other hand had stood for scientific studies, and they had no quarrel with any language such an Sanskrit or English. Knowledge, according to them, had to be modern and yet linked with the past traditions.

There is no point in over-emphasizing Macaulay's arrogance. The educational policy in India had been shaped before Macaulay. Eighteen years before him, Hindu College had clearly advocated for India 'education in English *and* Indian languages the literature *and science* of Europe *and* Asia'. The cross-cultural word 'and' was repeatedly emphasized which Macaulay could not change to either/or or a negative statement. The Government Resolution of 7 March 1835 proclaimed 'promotion of European literature and science through the medium of English language', and Macaulay stated : "We must at present do our best to form a class who may be interpreters between us and the millions. To that class we may leave to refine the vernacular dialects and to render them fit vehicles for conveying Western Knowledge". Medical College was founded in 1835 and the science lectures there inspired Akshay Kumar Dutta, Rajendralala Mitra and later Mahendralal Sircar to spread the message of science amongst Indians. James Prinsep had contributed a lot in the emergence of scientific spirit and also the glow of patriotism amongst the Indians.

The third controversy regarding the era of James Prinsep has been raised only recently. Edward Said has presented his thesis characterising 'Orientalism as a Western style for dominating, restructuring and having authority over the Orient'.[46] This is far-fetched and unkind since many Orientalists have respected the Orient, and yet some Indian historians have joined the band-wagon of hyper-patriotism. Kejariwal has aptly remarked : "Indian historians were more than eager to accept the glory of India's past as revealed by British historians but the historians themselves were rejected as biased and motivated" ![47] Deepak Kumar in his otherwise wonderful essay equates the Orientalists with the Anglicists and unkindly remarks : "The Orientalists were equally involved in this project (of domination by the Anglicists), albeit in a slightly different way. The Anglicists and the Orientalists look like polar opposites but in reality they are not".[48] For sustaining the paradigm that colonial tradition was totally devilish, the devil must not be given even

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his due ! If necessary, James Prinsep may be equated with T. B. Macaulay !

In response to the afore-cited unbridled vituperations, Professor A. L. Basham (though a great scholar, he may also be branded as a member of the Raj !) legitimately questioned whether the Orientalists of the Asiatic Society derived any material gains for their work. Did they do all this to strengthen the British hold on India ? Did James Prinsep decipher Aśokan inscriptions so that England could dominate a subject people ? "If these scholars wanted to serve England or the Company in their spare time, they could surely have found more effective ways of doing so".[49] Those who argue that the British Raj was an unmixed evil, may extend their historical scholarship a bit further down the line, and consider the brutalities of the Muslim Raj and the caste atrocities perpetrated during the Hindu Raj and also the fact that for nearly two millennia the golden message of Aśoka in Brāhmī script was allowed to be forgotten till a member of the British Raj came around and deciphered it !

Basham asserted that the Orientalists must have been motivated chiefly by the intellectual curiosity to understand 'a civilisation, which they recognized as possessing uncharted beauties and unplumbed depths'. Their work 'indirectly helped to lay the foundations of modern Indian nationalism'.[49]

In conclusion, we recall the Poet Rabindranath Tagore's famous thesis that two kinds of foreigners came to India. The first category of people came to exploit and plunder; the other kind of people came to learn and then to teach and serve magnanimously. James Prinsep belonged to the second category.

Prinsep's achievement was two-fold : to communicate Western scientific knowledge to the East, and to reveal the glory and wisdom of the ancient East to the West and the whole world. We should adequately honour not only his achievements but also his *noble motive* and the *spirit of the era* of cross-cultural knowledge-transfer to which he and many others belonged.[50]

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50. James Prinsep's success in life was due to the inspiration and support that he received from many outstanding people who belonged to his era : Michael Faraday, H. H. Wilson, James Herbert, William Carey, David Hare, Vivian Derozio, (the utterances of) Raja Rammohan Roy, Brian Houghton Hodgson, Dr. W. H. Mill, George Turnour of Ceylon, Alexander Cunningham, Dr. W. B. O'Shaughnessy to name a few.

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JAMES PRINSEP AND HIS PICTORIAL VIEWS OF BENARES

Asok K. Bhattacharya

James Prinsep, a pioneer in Indian archaeology, was a man of remarkable versati-lity. Like many of the Renaissance personalities, he was given in his family private education, instead of formal ones, enabling him to acquire in a short time proficiency in such diverse subjects as architecture, civil and mechanical engineering, chemistry, geography and astronomy. He also learnt to draw and write lucidly in his own language, and subsequently to study some of the most ancient languages and scripts of the East. When we consider the diversity and volume of his work, most of which he devoted to India and her civilization, we cannot but recognize in him one of the most earnest and dedicated friends of our country, who in his stride carried the traits of Renaissance in a following age.

Prinsep, to our dismay, lived a very short life, exhausting himself in over work. The forty years that he lived (20 August 1799-20 April 1840), half he spent in preparing himself in England, and the other half in India, the country that he served with love and admiration. His stay in India may, again, be divided into two equal parts, spending ten years in Benares and ten years in Calcutta. He arrived at Calcutta with an assignment of the Assistant Assay Master of the city's Mint. This appoinment was a turning point of his life. Here he got the opportunity of working under one of the greatest Indologists ever produced by Europe, Horace Heyman Wilson, Sir William Jone's collaborator in founding the Asiatic Society. Wilson made Prinsep interested in Indian studies, and he was also instrumental in sending him to Benares as the Assay Master of the newly established mint there in 1820. In travelling from Calcutta he chose the riverway, and from the boat he sketched many of the river-side scenes with enthusiasm. But it was Benares or Varanasi itself that overwhelmed him. In a letter written about three months after he reached the Holy city he describes it to his sister in the following way :

"On the road hither I constantly met elephants, camels, and most picturesque hackeries, drawn by superb painted bullocks. The dress of the natives here is far more elegant than in Bengal. Instead of the universal white muslin drapery, we have here the gaudiest colours and costumes displayed, especially when any great festival attracts thousands of pilgrims from all the Hindoo world to bathe in our holy Ganges.

"This is glorious sight to see the ghats of Benares covered with a moving sea of

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heads, studded at small distances with temples of red and white stone, all minutely covered and adorned with flowers while from a hundred places, cymbals and drums peel forthe their strains of adoration. The time too is generally favourable to the exhibition, namely, at the eclipse of the sun or at the rising of the full moon. As soon as the signal is given by Brahmins, in plunge all the bathers and ripple the holy waters for a mile and a half along the shore."

In this description we find Prinsep not much different from other Englishmen, who wondered to discover "picturesque" beauties of their newly conquered vast colony. But in a few days he made himself distinct from most of them in his genuine interest in the city, and by the end of the next year he had surveyed the city in every detail, and drawn all the important buildings. And then, from that close survey, he prepared the first map of the ancient city. He himself admitted that the undertaking was a "stupendous" work and that he vowed to do nothing until he finished it; and that he did and got it published in December 1821 from England at his own cost. In his stay in the city as the Assay Master of the mint, his bondage with it grew. So he served the city in many ways, by founding Benares Literary Society in 1822, and making a press for printing its transactions. His first architectural efforts were towards improving his office and residential buildings. But more significant were the restoration of the minerates of Aurangzeb's famous mosque and the construction of a bridge on the river Karmanasha. But from the viewpoint of civil amenity most significant was his "laying of underground drainage system which still serves the city." He spent much time in observing the sky from the Mān Mandir made by Raja Sawai Jaising of Jaypur at Benares. He wrote along with William Cracroft a research paper on the Observatory. His interest in Benares and its people moved him from its sky to its populace; he spent years in conducting a statistics based first census of the city and published its results in the seventeenth volume of the *Asiatic Reseaches*. But still his love for the Holy city was not fully expressed. He knew almost every lane and every structure of it in the course of preparing the map and collecting data for the census, and his understanding of its way of life was so deep that he could not desist from presenting its views to the world. In one of his diaries he wrote, "Benares is a real town, extensive, and of stone. The Ghats on the banks of the sacred Ganges are really superb. A few sketches will however do much more in the way of description than all I could say of the narrow streets and painted houses, and picturesque walks; and equipages, carriages, dhoolies, camels and elephants, things you never see in Calcutta, and utterly beyond your powers of correct imagination."

Thus the sketches that he made in his years in the holy city were published together in 1831 and 1833 under the title *Benares illustrated in a series of drawings*. The sketches were lithographed in England, and the portfolio was printed by the Baptist Mission Press at Calcutta. In recent time a new edition of the book has appeared with an informative introduction by Kejariwal, which has facilitated the present study.

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Prinsep had not only satisfied the eye of the larger people by bringing to light his authentic scenes of the city, but he also wrote a very authoritative history of its long existence as the most sacred place of the Hindus through centuries, which was also a pioneering work. In representing the city in drawing he was not however the first person. Before him a few sketches of it were published by Bishop Heber and Lord Valentia; and a fine drawing of the Dasasvamedha Ghat was also included in the magnificent *Oriental Portfolio* of Thomas Daniell. But these detached views conveyed, according to Prinsep, a very faint idea of the town and its population to the Europeans; and that was the reason of his endeavour. We feel fortunate for his decision, as after about two hundred years of their execution, the drawings show us a very vivid intimate picture of the city and its life. As historical documents their value will increase through the passage of time.

The drawings are no doubt work of a very deft hand, that was trained in handling minute lines of the scripts and other mechanical designs. They represent an artistic viewpoint that was dominating England since the establishment of the Royal Academy of Art in the year 1768 under the leadership of Joshua Reynolds. They are realistic in terms of the post-Renaissance European art as pursued by the painters of Baroque style, emphasising on light and shade, proportions and perspective. The accuracy in delineation of scenes are remarkable; and when we recollect the fact that Prinsep was an amateur artist, we mark in them one of the most significant expressions of his many-faceted personality.

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JAMES PRINSEP IN CALCUTTA

P Thankappan Nair

JAMES PRINSEP, the most celebrated among the Prinseps who lived and worked in Calcutta, has carved out a niche for himself in the city though he stayed here only for nine years. He is commemorated in the city by two streets, one memorial Ghat, and two institutions, namely, the Asiatic Society and the Mint. Prinsep's activities in Calcutta were confined to, in his official capacity, (1) as the Secretary and Assay Master of the Calcutta Mint, and in his honorary capacity as (2) Secretary to the Asiatic Society and excavator of the (3) Circular Canal. The feasibility of the reclamation of the marshes in the east of the metropolis called Salt Water Lakes was certified by him in 1837. He was a versatile genius, for he was not only an (1) artist, (2) architect, (3) archaeologist, (4) epigraphist, (5) numismatist (6) Oriental scholar, (7) scientist, (8) Town-Planner, (9) Journalist, (10) Assay Chemist, (11) actor, (12) musician but also (13) a friend of natives.

James Prinsep, born on 20th of this month 200 years ago (1799) as the 10th child of John Prinsep and his wife Sophia, inherited the qualities of both his father and mother. John Prinsep who spent 17 years in Calcutta from 1771 to 1788 during the days of Governor General Warren Hastings, was a celebrated merchant. He is chiefly remembered today as the introducer of (1) indigo cultivation in Bengal in 1778, (2)printing of cotton fabrics or making of Chintz in 1773, (3)copper pice in 1780 which replaced gradually the Cowries, and (4) a regular ferry service between Palta and Ghyretty in 1777. One of the biggest real estate owners of Old Calcutta, he owned 2 bighas 11 cottahs of land opposite the present Lall Bazar Police headquarters and 2 bighas and 20 cottahs in Old Court House Street, where the United Bank of India erected its headquarters. Another property covering more than 2 bighas in Dalhousie Square cannot be identified for want of its boundaries, though the sale deed is in existence. He married Sophia Elizabeth Auriol, sister of the then Chief Secretary to the Government, J. P. Auriol and returned to England with a fortune of £40,000 in his pocket to send seven of his sons to seek their fortunes in India.

The family was in straitened circumstances during the childhood of James Prinsep. He was not, therefore, educated in universities but in the school of adversity. Study at the local grammar school for a year is what his father could provide him. His mechanical aptitude recommended his father to select the profession of an architect,

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but too close an application to mechanical studies spoiled his eyes. After restoration of his eye-sight, he was apprenticed to Mr. Bingley, Assay Master of the Royal Mint, for a year or so. John Prinsep's running of the copper mint in Palta for seven or eight years helped his son to master the mysteries of minting coins. Appointed as Deputy Assay Master of the Calcutta Mint, James Prinsep landed in Calcutta on 15th September 1819 at the age of 20 with his brother Thomas. Both the lads were received at Chandpal Ghat by their elder brother Henry Thoby Prinsep, who was in Bengal since 1808 as a Civil Servant.

James Prinsep's official life started in Calcutta as Deputy to Dr. Horace Hayman Wilson, then the most celebrated Sanskrit scholar and Assay Master of the Calcutta Mint. Dr. Wilson, a Surgeon by profession and a Sanskrit scholar by choice, was then the honorary Secretary to the Asiatic Society. The influence of Dr. Wilson on Prinsep is evident from his latter life to his devotion to Indian antiquities. Dr. Wilson was sent by the Government to Benaras in 1819 to reorganise the Mint in that Holy City. James Prinsep looked after the Assay work in the Calcutta Mint during the absence of Dr. Wilson for a year. He acquitted his job creditably. Dr. Wilson recommended erection of a new Mint at Benaras for which designs were obtained and work started. James Prinsep proceeded to Benaras to take charge of the office of the Assay Master of the Mint there and reached the Holy City on 26th November, 1820.

Activities of James Prinsep in Calcutta during 1819-1820 were confined to his official duties at the Mint which was then situated at Church Lane, opposite St. John's Church, the Old Cathedral of Calcutta. The site of the Old Mint is now occupied by the Stamp and Stationery Office of the Government of India. The Calcutta Mint started coining rupees in 1757. The mint from 1757 to 1792 functioned from a portion of the abandoned Old Fort William, for the earlier name of Koilaghat, more correctly Killaghat, Street was Tankshall Street. The shifting of the Mint to the Church Lane was effected in 1792. James Prinsep probably resided in 1819-1820 in Calcutta with his brother Henry Thoby Prinsep, whose house was at the present 33 Chowringhee, or old 40 Chowringhee Road, the site of which was the home of Bengal Club for more than 150 years. A new mint in Calcutta was planned in 1824 and the construction of the edifice at 47 Strand Road was taken up in 1824. Captain William Nairn Forbes of Engineers was the architect of the Mint at Strand Road and he was deputed to England to select the most modern machinery for its working. When the Calcutta Mint started its operations, the Benaras Mint was closed in 1829. James Prinsep returned to Calcutta as Deputy Assay Master of the Calcutta Mint in April 1830. His name was proposed as a Member of the Asiatic Society on 5th May 1830 by Dr. Wilson and he was seconded by Sir C. E. Gray, the Society's President and James Prinsep was elected as a Member on 7th July 1830. The Asiatic Society took pride in getting the youngest of the Fellows of the Royal Society on its rolls. His experience as the architect of (1) the Benaras Mint, (2) St. Mary's Church, (3) Nandeswar Kothi, etc. in

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the Holy City, besides commissioning of a most modern drainage system with its 800ft. long 9 × 7ft. tunnel passing under the foundations of even seven-storeyed buildings and other engineering feats was utilised by the Asiatic Society. Though he designed an evaporometer, fluviameters, Assay balance and other delicate scientific instruments in Benaras, Prinsep did not find time to devote his attention to design such mathematical instruments in Calcutta. However, he continued his interest in meteorology, geology and other developing branches of Science in Calcutta. Chemical analysis of coal and other minerals and metals was continued by James Prinsep in Calcutta as well. The Coal industry of Eastern India is indebted to James Prinsep, for it was he who analysed the samples from 1820 to 1838 and reported upon the feasibility of commercial exploitation of the coal-bearing areas in this region. Major coal mines of India are situated in the Bengal-Bihar belt and Prinsep's recommendation to their development is today forgotten.

Secretary to the Asiatic Society

James Prinsep's connection with the Asiatic Society did not start officially before his election as a Member on 7th July 1830 soon after his return from Benaras. In fact, his association with the Society, dates back to the very day he landed in Calcutta in 1819. He established the Benaras Literary Society in 1822 with the help of a young French Naturalist, Monsieur Duvaucel. This Literary Society was instituted as an auxiliary body to the Asiatic Society and the papers read at its meetings were regularly transmitted to the parent body at Calcutta. A few of these papers, marked "Benaras Communications" still unpublished, are available in the Society's English manuscripts collection, marked as such. The unpublished papers of Benaras Literary Society in the Asiatic Society's archives include: 1. Prinsep's Benaras Directory of 1822, 2. Examination of several boxes of Indian geological specimens presented by Dr. Thomas Yeld, 3. Analysis of the meteoric stone from Bitoura forwarded by William Cracroft, 4. Analysis of Mineral water, etc. These are published in my book on James Prinsep's life and work, first volume, dealing with his Benaras Period. The *Oriental Magazine* edited by Dr. H. H. Wilson, and *Gleanings in Science*, edited by Capt. J. D. Herbert, were the channels of publication of the labours of the Members of the Benaras Literary Society unless they were very valuable to merit inclusion in the *Asiatic Researches*. The Benaras Literary Society seems to have become lifeless when its guiding spirit, James Prinsep, left the Holy City for the British Capital of India.

Elected Secretary to the Physical Committee or Class of the Asiatic Society on 26th December 1832 or so, Princep was nominated to the office of the Secretary to that Society on 9th January 1833, on the departure of Dr. Wilson for England to take up his new assignment as the first Boden Professor of Sanskrit at the University of Oxford.

"The tree which was auspiciously planted by the great Sir William Jones spread its roots in different lands where the arts of cultivation are better understood, and the value of its produce can be more

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skilfully developed", said James Prinsep in his first annual report to the Asiatic Society for 1833. When Prinsep took over the reins of the Society from Prof. H. H. Wilson, it was "shorn of all the exclusive honours, and formed one, perhaps, the humblest of the numerous bodies associated in Europe and in India, for the prosecution of inquiries into the history, antiquities, the natural productions, arts, sciences, and literature of Asia". The Asiatic Society of Bengal had the poor consolation in 1833 that it was the parent stock of the Asiatic Societies of the Great Britain and Ireland, France, Germany and other lands. James Prinsep, the architect of the fortunes of the Asiatic Society, had taken upon himself, on his assumption of its Secretaryship in 1833, to rejuvenate the parent stock and show to its numerous scions that it was capable of producing the fairest blossoms and its most exquisite fruits. New vistas were opened by James Prinsep for the Asiatic Society of Bengal so much so that the numerous learned bodies all over the world started breathlessly watching its progress in discoveries one after another in the history of India, antiquities, natural history, etc. The discovery of the name of Aśoka the Great was the fairest fruit ever produced by the Asiatic Society of Bengal. The Society scaled its golden heights under the baton of James Prinsep.

The transfer of the priceless (1) manuscript collection of Fort William College to the Society in 1833 with the printed works in Oriental languages, (2) presentation of the collection of original paintings, 30 in number, belonging to the celebrated artist, Robert Home, a former Secretary of the Society, (3) international honour for three of its members (B. H. Hodgson, P. T. Cautley and Alexandar Burnes), (4) permanent Government grant for (a) continuance of publication of Oriental works, and (b) elevating its Museum to an institution of national importance, (5) discovery of fossil remains in the Siwalik Range, beds of the Jumna river, Narmada Valley, Gulf of Cambay and Burma, were all effected under the stewardship of James Prinsep. James Prinsep's own decipherment of the Brāhmī script in which the Aśokan Edicts till then known were written, and the legends on the bilingual Bactrian coins were the crowning glories of the Society. Thus the Asiatic Society was turned into the only institution of its kind in the world having its own Museum of antiquities and Natural History, Manuscript Collection, Art gallery, Library, etc. all housed in its own commodious building. The Society's activities were published monthly in its Journal so that the world at large came to know what happened within its four walls. All these were master-minded by James Prinsep, a genius, the like of which England had never sent to India.

The inscriptions on the columns of Allahabad, Delhi, Lauria Nandangarh and Lauriya Araraj (both in Bihar), on the rocks of Dhauli in Cuttack and Girnar in Gujarat, had baffled antiquarians and historians for they remained sealed secrets of Indian history till 1837. James Prinsep's genius discovered the key to read these scripts in which these ancient writings were written for effecting which he had no external aid. Mons. Jean Francois Champollion (1790-1830), who read the Egyptian hieroglyphs had the ben-

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efit of the aid of a Rosetta stone to unlock the secrets of Egyptian pictographs. James Princep had to depend upon his own wit, intuition and wisdom to decipher the Brāhmī and Kharoshṭī scripts.

James Prinsep used to spread out on his long table the facsimiles of these inscriptions for months together in the early morning every day and roll them up when he went over to his Chemical Laboratory in the Assay Office of the Calcutta Mint. Months of patient and persevering inspection of the facsimiles of Edicts helped him to find out the characters occurring more frequently. His intuition into their characters flashed like a lightning. Engraving of the numerous facsimiles of inscriptions for his Journal of the Asiatic Society helped him to isolate the letters which occurred in them more frequently. The history of the decipherment of the Brāhmī script, which was then designated Arian Pali, has already been narrated by James Prinsep in the Society's Journal. We shall only admire the genius Prinsep when we remember that the vowel A has 19 variations in the Aśokan Edicts. We find different shapes of one and the same letter in one and the same inscription, nay sometime in the same line (*e.g.*, Rock Edict of Girnar, line iii, 5) where three forms of A are occurring. Four or five forms of A can be seen in the Girnar Rock Edict. Sometimes the same letter is angular; at other times it is cursive. Considering such variations in one and the same Edict, nay, in one and the same line of the same edict, it was sheeer magic of James Prinsep's genius that could decipher them. The Girnar Rock Edict of Aśoka the Great contains many peculiarities which are absent in other pillar and rock edicts of the great monarch. The Dhauli (Cuttack) Edict of Aśoka is also having several peculiarities. We can multiply the instances, but we have cited one or two of them here to impress upon our audience the versatility of the genius of James Prinsep. The Rock Edict of Girnar also contains obliterations of incorrect words and syllables by their imperfect removal. And these are the very edicts deciphered by Prinsep's brain to which the most advanced computer could not have been a match.

The legends on the coins collected by Charles Masson, General Ventura and others from the topes of Manikyala and other mounds were partially deciphered by James Prinsep. The Kharoshṭī script which is written from right to left was confined to West and Central Asia whereas Brāhmī was in use in the rest of India. General Cunningham who started collaborating with James Prinsep in 1833 and Mr. Morris were the other two epigraphists who completed the key to Kharoshṭī.

The decipherment of the Brāhmī and Kharoshṭī scripts would have been simply an academic exercise, but for their bearing on Indian History and cultural conquest. The identification of Devanampiya Piyadasi Raja as Aśoka the Great Buddhist Emperor who ruled over the Indian sub-continent from Afganistan to Assam and Kashmir to Kerala during 272-232 B.C. was the greatest discovery of James Prinsep. The name of Aśoka did not occur in any edict till then (1838) discovered as we all know the Gujarra and Maski versions of Minor Rock Edict I are the only two inscriptions in

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which the great Buddhist monarch's name occurs. All other epigraphical records of Emperor Aśoka mention him as Devanampriya Priyadarsi Raja, 'the king who is the beloved of the gods and who glances graciously upon all'. Some of the edicts simply called him Devanampriya or King Priyadarsi. To discover Aśokavardhana of the Imperial Mauryan dynasty from Devanampriya Piyadarsi required the genius of James Prinsep. He could correctly identify Aśoka the Great from the mention of Yavanas (Greeks), Antiochs II in his Girnar Rock Edict and other circumstances. Prinsep's knowledge of classical Greek History is what led him to establish the contemporaneity of Aśoka with Antiochs II. The identification of Devanampriya Piyadasi as Aśoka the Great monarch of the Mauryan dynasty, opened the floodgates of ancient Indian History to fix its chronology. The decipherment of the name of Kanerkos in a Bactrian coin and his identification with Kanishka, another great Buddhist monarch mentioned in the Kashmirian chronicles called *Rajatarangini* was no less important to the dynastic history of North India. Apart from announcing the discoveries of great epochs of Indian History in his Journal of the Asiatic Society of Bengal every month without fail, the chronology updated from time to time, was published as *Useful Tables* as a ready reckoner.

James Prinsep's discoveries were not confined to Bactrian Numismatics and names now famous as Aśoka the Great, Kanishka, etc. He discovered men and materials as well. The names of Captain Markham Kittoe, General Alexander Cunningham and others in the field of Indian archaeology and epigraphy are now well-known, but scholars forget it was James Prinsep who discovered them and financed their field work. Prinsep even financed Cunningham in his earlier excavation of Sarnath. Kittoe was appointed Librarian and Curator of the Society's Museum so that he was assured of Rs.200 per month. The Society cheerfully bore the transportation cost of fossil specimens from Jumna beds and other places.

It was James Prinsep, under the auspices of the Asiatic Society, that initiated the protection and preservation of ancient monuments in India. Prinsep publicly deprecated, in the strongest language, the ruthless spoliation of the true objects of ancient monuments and their employment to elucidate the history of the country. The half-buried Allahabad Pillar, which the local people called Bhimsen's Gada, was set up in the fort of Allahabad with the restoration of the Lion Capital as urged upon by the Society to the Government. Dismantling of the Black Pagoda or the Konark Sun temple was stopped by the Government at the entreaty of the Society in 1839. Restoration of the Brahmeswara and Maghesvara temple inscriptions and that of Bhatta Bhava Deva to the Anantavasudeva temple at Bhubaneswar was effected in 1837 at the instance of James Prinsep.

Background to Bibliotheca India *series:* James Prinsep was the first to bring to the notice of the Society the abandonment of the publication of Oriental Classics undertaken by the General Committee of Public Instruction. The Resolution of the Govern-

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ment of Lord William Bentinck in 1835 to apply funds exclusively for English education divided the ruling English elites into Anglicists and Orientalists. Thomas Babington Macaulay, Sir Edward Ryan, C. H. Cameron and others were the protagonists of English education. H. T. Prinsep, H. Macnaghten, J. R. Colvin, Rev. Dr. Mill and James Prinsep were the supporters of Oriental languages. The Society was not concerned with the introduction of English as Official Language and devoting the funds of the Government for English studies, but only wanted the completion of works abandoned by the Committee of Public Instruction. The Society got permission to complete the abandoned Oriental works without any assistance from Government. A strong but respectful representation, submitted by the Society, to the Court of Directors of the East India Company, under the signature of its President, Sir Edward Ryan, was supported by the President and Council Members of the Royal Asiatic Society of Great Britain and Ireland and other officers of that powerful body. Dr. H. H. Wilson, Boden Professor of Sanskrit at Oxford and the East India Company's Librarian and Curator of its Museum, played an important role in influencing the decision of the Court of Directors of the Company. The home authorities sanctioned a permanent monthly grant of Rs.500 for completion of the Oriental works abandoned by the late General Committee of Public Instruction and take up publication of Oriental classics. The funds thus provided by the Government to the Society helped it to launch its well-known *Bibliotheca Indica* series in 1847.

The elevation of the Society's Museum into an institution of national importance with a permanent grant of Rs.300 per month from the Government at home was another major achievement scored by James Prinsep. The appointment of a full-time well-known Naturalist as Curator of the Society's Museum put it on solid foundations.

Siwalik Gallery: Fossil remains of giant animals like Sivatherium, camels, etc. collected by Lieutenant P. T. Cautley and others from the buried town of Behat in the Siwalik Range were sent to the Society from time to time. Giant fossil bones discovered by Col. Colvin, Captain Edward Smith, Lt. H. M. Durand, Lt. W. E. Baker, Sergent Edmund Dean and Conductor William Dawe from the beds of the Jumna river were all sent to the Society's Museum. Dr. G. G. Spilsbury sent fossil skull of a giant elephant from the Narmada Valley. The fossil remains of giant Mastodon and other extinct animals from the Perim Island in the Gulf of Cambay in Gujarat were sent by Lt. Fulljames and others to the Society's Museum. Though Dr. John Crawfurd was the first to discover fossil remains of giant animals in Burma in 1826, his collection was gifted to the British Museum. Major H. Burney was fortunate enough to collect fossil remains of hippopotamus and other giant animals from Burma which he sent to the Society. The fossil remains of extinct giant animals collected from the Siwalik Range, beds of the Jumna river, Narmada Valley, Perim Island and Burma are now available for inspection in the Siwalik Gallery of the Indian Museum. These collec-

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tions were made by naturalists in the field under the inspiration of James Prinsep. Not only did he engrave the drawings of these giant fossil remains and publish them in the Society's Journal and *Asiatic Researches*, but he also influenced the Society to bear the cost of their transportation from the sites to Calcutta.

The Government of India fully admitted, in 1837, "that the public of India and of Asia have incurred a heavy debt of gratitude to the Society for the persevering and successful efforts it has made for more than half a century to develop the literary resources of India, and to ascertain and collect objects of scientific and antiquarian interest." Not only the Government of India, but also the Court of Directors of the East India Company recognised the Society's claim for national support in 1839 and wrote thus: "The independent and useful activity of the Asiatic Society of Bengal during so long a period, entitles it justly to your consideration, and looking to it as the only institution in India, which offers any analogy to the great national libraries and Museums of Europe, it is a legitimate object of public support". Thus permanent monthly grants were sanctioned by the Government of India for the support of the Society's activities. The Museum got a permanent monthly grant of Rs. 300 to cover the salary of a qualified Naturalist as its Curator and his establishment charges, besides an assurance to grant funds for purchase of objects or collections of a non-perishable nature. The publication of Oriental Classics was put on a permanent footing with a monthly grant of Rs. 500 sanctioned by the Court of Directors of the East India Company. The establishment charge of the Manuscript Collection was also met by the Government by a monthly grant of Rs. 78. Thus, the Society's activities were fully funded by the Government of India by 1838 the year in which James Prinsep, its Secretary, was obliged to quit Calcutta for recovery of his health.

Incessant exertions and labour which James Prinsep's literary and scientific pursuits entailed, combined as they were with the artistic application required to his research, superadded with his official work as Assay Master of the Calcutta Mint, produced damage to his brain tissues, rendering them soft. In short, he became insane. When the symptoms became alarming, he was advised to seek change of air. James Prinsep, therefore, tendered his resignation of the Secretaryship of the Society on 1st November 1838 and left on 8th of that month for Cape of Good Hope and eventually to England.

President Edward Ryan, at the Asiatic Society's monthly meeting held on 14th November 1838, to take Prinsep's resignation into consideration said: "The objects of the Society had under Mr. Prinsep's able superintendence been prosecuted with a vigour, which had added largely to its credit and reputation, and that the results produced in every department of science and literature, for which the Society was indebted chiefly to its Secretary's activity and varied powers had sustained its character in a manner, rivalling the period when it derived renown from the labours of a Jones, a Colebrooke, and a Wilson".

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The Englishman of Calcutta, wrote on November 23, 1838, about the resignation of James Prinsep thus: "Literature, science, art, have all to mourn the loss of that support which they derived from the energy, the application, and taste of one who in the bloom of life had already attained a finished maturity of experience.. At a period of life when others are contented to be winning their way to distinction, Mr. James Prinsep has already attained the goal".

James Prinsep, who reached England, on 9th January 1839, died on 22nd of April 1840 at his eldest sister's house, 31 Belgrave Square, London. "Nature exhausted by incessant intellectual toil, was not able, even with the favourable circumstances of healthy constitution, temperament and regular habits, cheerful spirits, and a time of life scarcely in its prime, to rally from the effects of interest too perpetually excited, application never intermitted". His mother Sophia Elizabeth Prinsep, elder sister Sophia Charlotte Haldimand and Emily Rebecca Prinsep, his wife Harriet Sophia and other dear and near ones were at his bedside at the time of his end. His father, John Prinsep, had passed away 10 years ago. Surgeon Jonas Hall Pope, who attended on him in his days of malady, could not do much as James Prinsep had returned to England as a hopeless wreck.

Prinsep died at the pinnacle of glory, though he was in the prime of his life. During the five years between 1833 and 1838, he was elected (1) Honorary Member of the Asiatic Society of Paris, (2) Corresponding Member of the Zoological Society of London, and of the (3) Royal Societies of Marseilles and (4) Caen, (5) of the Academy of Natural Sciences of Philadelphia, (6) of the Philosophical Society of Geneva, (7) of the Albany Institute, & c.& c. He was elected a Fellow of the Royal Society of London at the age of 28. The Royal Society was the first to pay its tribute of obituary respect to its youngest Fellow. The President of the Royal Society ended his eulogy with the following words: "The cause of literature and archaeology in the East could not have sustained a severer loss".

The Asiatic Society at its special meeting held on 1st July 1840 to mourn for the loss of its Secretary from 1833 to 1837 passed the following resolution :

"For a period of six years, in the midst of laborious public duties, he devoted himself to the pursuits of the Society with unexampled assiduity and zeal. He carried on an extensive correspondence in Asia and in Europe. He edited the Journal of the Asiatic Society, a work containing the most valuable records of all that had been effected in Natural History, in Chemistry, in Geography, in Geology, in Statistics, and in the Language and Literature of the East: amongst these his own contributions form the most conspicuous part and have been the means of raising the Journal to that high degree of celebrity, which it has obtained, not only in this country but in Europe, and all parts of the world.

"His latter labours in deciphering the Pali inscriptions of Aśoka, and in tracing through the Bactrian coins, the link between the histories of the East and West, have

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placed him in the foremost rank of those whose brilliant discoveries have enlightened and adorned the obscure path of antiquarian research". The Society had already taken steps to get a bust of James Prinsep.

Journalistic Career

The publication called *The Journal of the Asiatic Society of Bengal* was the copyright of James Prinsep as there is no legal entity for The Asiatic Society of Bengal. The institution is simply THE ASIATIC SOCIETY since its establishment on 15th January 1784. The Parliament of India confirmed it on March 23, 1984 when it was declared an institution of national importance. James Prinsep added the phrase "of Bengal". The society had no say in the conduct of the Journal. The goodwill of the society sustained the Journal. The Society sanctioned the name of "Journal of the Asiatic Society" on 7th March 1833 so long as it was edited by one or both the Secretaries of that institution. James Prinsep being the Secretary of the Physical Class or Committee, there was no technical lacuna. He designated the publication as "The Journal of the Asiatic Society of Bengal" in order to distinguish it from the periodicals issued in Europe bearing the name of Asiatic Society in France and England. Thus, the Asiatic Society got a Journal without any financial stake and responsibility. The title page for volumes 1 to 6 (1832-1839) quoted Sir William Jone's motto contained in the Preface to the Asiatic Researches : "It will flourish, if naturalists, chemists, antiquaries, philologist, and men of science, in different parts of Asia will commit their observations to writing, and send them to the Asiatic Society at Calcutta; it will languish, if such communications shall be long intermitted, and it will die away, if they shall entirely cease". The 9th volume of the publication issued for 1840 was simply "Journal of the Asiatic Society of Bengal" omitting the definite article 'The'. Whether the omission of the definite article was a printer's devil or was intentional, we don't know. James Prinsep went on increasing its bulk. Beginning with 572 pages in 1832 he increased its bulk to 1064 pages in 1838, apart from Supplements like Useful Tables, etc. The proprietary right of the Journal vested with James Prinsep. With his departure for England ended his series of the Journal and a new series was brought out by the Officiating Secretaries between 1839 and 1842. The Journal was published, owned and edited by the Society's Secretary as its official organ, from 1842 onwards when the official transactions called the *Asiatic Researches* were discontinued. The Society did not change the title, as it had become well established though the institution was officially designated simply THE ASIATIC SOCIETY.

The Journal of the Asiatic Society of Bengal from 1832 to 1841 was the mouth-piece of the Asiatic Society, for the monthly publicized its activities in an extensive scale. Apart from publishing the contributions and communication of the Society's Members, the Journal printed its proceedings extensively. There was no time-lag in the publication of the Society's activities and the Asiatic Society was thus raised to the forefront of learned bodies all over the world. No other institutions in the world had such

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facilities in publishing its activities as the Asiatic Society had through the medium of its Journal and Transactions. Prinsep did not wait for the correctness of the readings of the inscriptions and conclusions arrived at by himself and others as there was always room for improvement.

James Prinsep was a genius and he was daring in his ventures. Discoveries and descriptions of the Bactrian coins, Siwalik and other fossils in the Indian sub-continent, readings of the ancient inscriptions which were nothing but hieroglyphics to scholars for thousands of years without ascertaining their correctness, etc. could not have been done by the Society as a collective body, but Prinsep had the boldness and freedom to bring them to the attention of the scholars all over the world in the twinkling of an eye. "As a proof of the benefit conferred on science by the free and extensive circulation of a periodical devoted to such objects, the Editor feels pride in alluding to the ardour which his plates of ancient coins have inspired in many active collectors, and above all to the reward bestowed on himself by the munificence of General Ventura, the most successful pursuer of antiquarian research in Punjab, who has presented to him all the coins and relics discovered on opening the celebrated Tope of Manikyala. They are now on their way to Calcutta", Prinsep wrote in his Preface to vol. 2 of the Journal.

James Prinsep did not live in a fool's paradise, claiming all that he did and read was fool-proof. He was open to criticism and subject to correction. He faltered and committed mistakes in the untrodden path chosen by him. Mistakes make a man wiser and let us read Prinsep's own words as to the discovery of the key to Brahmi and Kharoshti scripts. "..In our hasty and undigested mode of publication, we are doubtless open to continual corrections and change of views : as a talented and amusing satire on our present predilection for old stones and old coins, as the Meerut Magazine ascribes it,–'if not satisfied with one account our readers have only to wait for the next Journal to find it discarded, as in the case of the Bactro Pehlevi alphabet'. Some may call this system as inconvenient waste of space and tax on readers, who are entitled to have their repast served up in the most complete style at once, and should not be tantalized with fresh yet immature moroeux from month to month. We, however, think the plan adopted is most suitable to an ephemeral journal, which collects materials and builds up the best structure for immediate accommodation, although it may be soon destined to be knocked down again and replaced by a more polished and classical edifice;–*diruit oedificat mutat quadrate rotundia*,–may still be said of our Journal without imputing capricious motives to our habit of demolition. We build not fanciful theories, but rather collect good stones for others to fashion, and unless we advertise them from the first, with some hint of their applicability, how should architects be invited to inspect and convert them to the 'benefit and pleasure of mankind'?–hitaukhaya manushanam–as the stone pillars at Delhi and Allahabad quaintly express the object of their erection.

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Family and Social Life

The family and social life of James Prinsep was equally enviable as his official duties, scientific achievements and gratuitous public service. He found in Harriet Sophia Aubert his meet companion. His family circle was extensive as there were five married Prinseps, uterine brothers, at the time of his marriage. As he was a talented actor and a musician as well, he was very much in demand for his histrionics and devotion to music.

Family : The marriage of James Prinsep with Harriet Sophia, eldest daughter of Major-General J. Aubert (1784-1834) took place in Calcutta on April 25, 1835. This happy event seems to have been arranged, most probably by Agnes, wife of his elder brother George Alexander Prinsep who had the care of the three Aubert boys, George, William and Frederick and their sister Eliza. Prinsep was passionately attached to his wife and all his property was bequeathed to her with her brothers Henry Alexander Aubert, George Cracroft Aubert, Frederick Aubert and Eliza Anne Aubert as trustees. James Prinsep's son, James Junior, born on Saturday, 14th May 1836, died in the same year. Mrs. Ella Wilson, only daughter of James Prinsep, died peacefully in 1916. Harriet never quitted the chamber of sickness through the many months of James's protracted suffering and who, in each interval of his malady, guided his wandering thoughts to that world of spirits he was fast approaching. Miss Isabella Fane, only daughter of General Sir Henry Fane, Commander-in-Chief of India, tells Harriet "is a quiet little empty-headed woman, but then he is certainly not the first and, report says, not the second either". Colonel Jeremiah Aubert was the son of Alexander Aubert of Moorfields, London, a Swiss from Geneva, and Sarah Clarke, his wife. Thus Harriet was a Swiss lady with all the qualities of that nation.

The Chowringhee Theatre, which stood at the corner of Chowringhee Road and Theatre Road from 1813 to 1839 did not suffer from the departure of Dr. Horace Hayman Wilson, its partner and soul since its inception, in 1833, as James Prinsep was a talented actor as well. Prinsep appeared on the boards of the Chowringhee Theatre since his return from Benaras in 1830. On Thursday evening, 25th February 1836, Sir Henry Fane, his daughter Isabella and suite went to Chowringhee Theatre, to see *Macbeth*. "It was exceedingly well got up", wrote Miss Fane in her Journal under that date. "The witch scene was very well managed, but the hags themselves were not well drest, that is to say they were too well drest, and would have been much better had they been less smart. Mr. Holroyd was one, and Mr. James Prinsep another. Our little milliner acted Lady Macbeth, and really in a most extraordinary manner. She has not either figure or voice to make this character what it ought to be, which is no fault of hers; but for those who had not seen Mrs. Siddons in the same character, Mrs. Leech appeared wonderful". James Prinsep was cast in good roles in almost all plays performed on the Chowringhee boards. His modesty did not allow him to come to the forefront of the histrionic art. Nobody at that time was so gifted as James Prinsep, as he was a singer too.

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James Prinsep learnt music from his elder sisters, Sophia and Amelia at home before sailing for India. The *Gleanings in Science* and the *Journal of the Asiatic Society of Bengal*, both of which he edited, seldom missed notices of musical instruments. He was much sought after for musical soirees. "The social qualities" of James Prinsep, quotes Vincent Arthur Smith, "were of the first order. To a sprightly inventive fancy were united in him a lively and equable flow of humour, a love of conversation and society, and an almost feminine gentlemeness of manner; these were embellished by regular accomplishments as a musician and artist. He was in consequence ever a prime mover in everything that concerned the public or private amusements of the circle in which he moved".

Miss Fane in her Journal under date Feb. 4, 1836 wrote: "We had plenty of singing and about 160 listeners, amongst them the Governor-General (George Eden, Earl of Auckland) and suite and the Nepal General (Martabar Singh Thapa, nephew of Bhim Sen Thapa, prime minister of Nepal) and suite". Prinsep was the musician who regaled his audience regularly at the Government House.

Prinsep's Engineering Services to Calcutta

Permanent benefits conferred by James Prinsep to the metropolis of Calcutta include the excavation of the (1) Circular Canal, and (2) certifying the feasibility of the reclamation of the Salt Water Lakes. Prinsep's planning, designing and execution of a most modern drainage system for the ancient city of Benaras in 1825-26 demonstrated his sound technical knowledge and town-planning in practice. The outstanding feature of the drainage system effected by Prinsep for Benaras was an 800ft. long, 9ft. wide and 7ft. high tunnel which collected the storm and domestic waters for discharge into the Ganges. This underground tunnel, passing under the foundations of even seven-storeyed buildings, without any mishap in the progress of its construction, was completed in the record time of two years. Execution of such an engineering project todate is unparalleled in the history of Indian Engineering.

Considering the fact that tunnelling for the Calcutta Metro Railway's stretch between Shyambazar and Balgachia was effected in 1985-1990 with Austrian know-how and collaboration, Prinsep's use of shield tunnelling technology in Benaras was a marvellous achievement in the annals of Engineering considering the further fact that the work was executed without the help of modern machinery and untrained workforce.

The same innovative spirit of James Prinsep was again demonstrated in the construction of the Karmanasa bridge, the earliest stone-bridge of five-spans erected by a European in India. The bridge at Nabatpur, 30 miles away from the residence of Prinsep in the Mint of Benaras, was erected under the personal supervision of Prinsep, who regularly visited the worksite almost for two-years in 1830-1831, without fail. Quicksands had rendered earlier four or five attempts at bridging Karmanasa a nightmare by their miserable failures. Construction of

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coffer-dams for bridging rivers was known to native engineers of India, but sinking of caissons loaded with stones for the foundations of the piers was effected by Prinsep for the first time in India. Prinsep's shield-tunnelling and Caisson-sinking for pier foundations are the first two recorded instances of transfer of western technology in India. We are called upon here to record our admiration for Prinsep's daring boldness in effecting such technological innovations with local talent and indigenous methods in the absence of machinery suited for such purposes 175 years ago. These engineering achievements of Prinsep without anybody for consultation and execution even relegates Bhagiratha, the most innovative engineer of Puranic India and Pundits who read ancient Indian scripts on the columns of Allahabad and Delhi and the rocks of Girnar and Dhauli in Cuttack, without knowing the name of Aśoka the Great.

Circular Canal: The Circular Canal that divided the Salt Lakes from Calcutta was the arterial channel of navigation for north and east Calcutta before the advent of the Railways and motor transport. This $5^1/_2$ mile long canal was excavated by James Prinsep between 1830 and 1835 to serve Calcutta not only as a waterway for navigation to Sunderbans, but also to save the city from the encroachment of the marshes in the East called the Salt Water Lakes, besides flushing the rain and filthy waters that accummulated in its streets. The canal still serves the cause of navigation for large boats loaded with hay, bricks and other bulky commodities are making use of the waterway. The role of the canal is now limited in respect of its drainage of Calcutta and the Salt Lakes. Silting and unchecked encroachments on both banks of the canal have made it an eye-sore. The canal hits the headlines every now and then when the shanties on its banks are reduced to ashes by fire. No serious attempt has been made in recent years to make the canal worthy of cruising on pleasure boats and other water sports, lined as the waterway is with bridges and luxurious ever-green trees on both sides.

The canal takes off from the Hoogly with a lock at Chitpur and passes by Bagh Bazar, Belgachia, Maniktala, Belliaghatta and Entally to Dhapa, through a panaromic scenery. Though Kristopur (= Krishnapur), Bagjola, new Cut (since filled up) and Entally canals are part of the Circular Canal, James Prinsep was only responsible for its excavation from the Chitpur Lock to Dhapa in the southerly direction. The Circular Canal becomes bifurcated at Ultadanga Road bridge as Kristopur Canal and Belliaghatta Canal. The Belliaghatta Canal, which in fact is the southerly continuation of the Circular Canal, was the work of James Prinsep, but not other branch canals.

Captain Thomas Prinsep, younger brother of James Prinsep, was appointed Superintendent of canals in 1827 to take up excavation of the Eastern Canals (collective name for Circular, Kristopur, Bagjola, New Cut, Bhangar, Central Lake Channel, Entally and other canals), to bring the products of the northern and eastern districts of Bengal to Calcutta just as Major William Tolley had

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demonstrated, in 1775, the practicability and profitability of such a waterway to serve the southern districts by deepening the Adi Ganga channel, now called Tolly's Nalla or Canal. Following the death of Captain Thomas Prinsep from the fall of his horse on 23rd January 1830 at the corner of Chowringhee and Park Street in front of the Asiatic Society, James Prinsep offered gratuitously his services to the government for completing the canals begun by his younger brother, Laurels won by James Prinsep in the fields of Science and Technology in Benares, induced the Government of Lord William Cavendish Bentinck, Governor-General of India, to appoint James Prinsep, on 23rd February 1830, as Superintendent of Canals as well in addition to his official duties as Deputy Assay Master at the Calcutta Mint. James Princep completed the Circular Canal from the Hooghly to Ultadanga snd thence to Belliaghatta, Entally, and Dhapa Lock. The Dhapa Lock is now occupied by the site of the Science City by the side of the Eastern Bypass. Canals called Kristopur, Bhangar, Bagjola, New Cut, Central Lake Channel, etc. were not taken up by James Prinsep on account his pre-occupation with the Circular Canal in the midst of his official duties at the Mint and Laboratory work of chemical analysis of minerals and metals constantly pouring in, arduous nature of the work as Honorary Secretary to the Asiatic Society, coupled with his own numismatic and epigraphic studies. Differences arose between James Prinsep and the Military Board, the agency responsible for the execution of public works in 1834, leading to Prinsep's resignation of the honorary office of the Superintendent of Canals. The completion of the excavation of the Circular Canal to the entire satisfaction of the Government and the Military Board with its Chitpur Lock in 1833 in the midst of quicksands, upon a principle of his own designing, was regarded as a highly useful piece of engineering work, adding another feather to Prinsep's technological innovations.

Salt Lake reclamation: The marshes called Salt Water Lakes in the eastern fringe of Calcutta had an area of 26 sq. miles or 17,000 acres in the days of James Prinsep. The "Northern Salt Lakes", having an area of 18 sq. miles lies in the north of the Storm Water Channel of the Calcutta Municipal Corporation and is bounded by the Kristopur Canal on its north and east, the Storm Water Channel on the south and the Central Lake Channel and the New Cut Canal (since filled up) on the west. The rest of the area bounded by the Tolly's Nallah on the south, the Eastern Railway line to Sonarpur and the Panchannagram embankment on the west, now defunct Bidyadhari on the east and the Central Lake Channel on the north is called the "Southern Salt Lakes". An area of 4.75 sq. miles has been reclaimed between 1962 and 1970 by Messrs. Invest-Import, a Yugoslav firm, filling the shallow waters by depositing the spoils of dredging the Hooghly. Dr. B. C. Roy, the late Chief Minister of West Bengal, took the initiative in 1953 to reclaim the Northern Salt Lakes and the contract for the work was awarded to the Yugoslav firm on 16th April 1962 just before his death. The satelite city, thus completed in 1972, is called

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Bidhannagar or Salt Lake City and is divided into five sectors, served by two Postal delivery zones (Calcutta 700 064 and Calcutta 700 091).

The earliest proposal for reclamation of the Salt Lakes originated with Governor-General Lord William Cavendish Bentinck on 2nd February 1830 *vide* his Minute of that date in the Financial and Revenue Department. Lord Bentinck recommended the reclamation of the Salt Lakes by a simple method of draining the water thus:

"7. It will be observed that the believed lowest bed of the Salt Lake is at 2, that the depth is from $1\frac{1}{2}$ to 2ft. and nowhere exceeds $2\frac{1}{2}$ft., that the neap tides in the Hooghly in March are 5ft. 4 inches and the lowest springs in March 7ft. 5 inches, below the lowest bed of the lake, in the one case giving 3 feet 4 inches and in the other 5ft. 5 inches fall. It is evident from this, the complete drainage of the lake either into the Hooghly itself, or into the (Circular) canal is perfectly practicable".

The Governor-General's Minute was based on Captain Thomas Prinsep's studies and James Prinsep confirmed the feasibility of the reclamation of the Salt Water Lakes in his evidence tendered to the Fever Hospital and Municipal Improvements Committee on 15th May 1837 thus: "Captain Prinsep....has given a very ingenious plan for the gradual silting up of the Lake. I feel, however, confident that a much better mode of effecting this object may be pursued. In my judgment, the lake should be first drained when the water has been completely let off, it will be seen whether it is necessary to warp it up or not...In order to warp up the Salt Water Lake to a level with the surface of the surrounding country it will be necessary that the water introduced from the Hooghly on the (Circular) Canal should stand two or more feet above the present surface of the lake".

The cost of warping up of the Salt Lakes was estimated by Capt. Thomas Prinsep in 1830 at Rs.1,20,972 which included a compensation of Rs. 30,000 for the rights of fishing enjoyed by individuals. The reclamation of the 4.75 sq. mile Salt Lake City cost Rs. 7.2 crores to the Government of West Bengal in 1962-1970 whereas Captain Thomas Prinsep's estimate, confirmed by James Prinsep, was for the whole area of 26 sq. miles. The simple expedient recommended by Prinseps would have saved crores of rupees to the public exchequer. James Prinsep's confirmation of the practicability of the draining of the Salt Lake was based on his checking the levels taken by his brother and his own practical knowledge of vast engineering works like drainage of Benaras and Karmanasa bridge.

Genius of James Prinsep

James Prinsep was a genius for which we shall recall one incident here. A model steam engine, kept at the Calcutta Mint for exhibition, was put to work by James Prinsep to turn a lathe, a punkah, and an organ, so that he could at once labour at the one, whilst he derived the benefit of the other and amused himself with the harmony of the third. This was the character of James Prinsep in which nobility, genius, elasticity, and practical application were equally

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present. Prinsep was the last man to undertake scientific or literary research unless it led to the greatest benefit of the mankind. The decipherment of the Brāhmī script in which the Aśokan edicts were inscribed or decoding the Kharoshṭī script in which the legends of Bactrian coins were written opened the floodgates of ancient Indian History and thus establish unimpeachable landmarks for guidance. All his scientific research, whether it was in meteorology or physical sciences, were result-oriented. His meteorological observations were aids to navigation. His Assay Balance and Pyrometer were indispensable tools in his Assay work. Science was thus harnessed to technological breakthroughs. The genius of James Prinsep is what turned his scientific and literary discoveries to practical application.

"Doing easily what others find difficult is talent, doing what is impossible for talent is genius", said Henri Amiel (1821-1881), Swiss philosopher and poet. Of the genius of Jame Prinsep, Dr. Hugh Falconer wrote: "That he was a great man, it would not perhaps be strictly correct to assert, but he possessed qualities, and he has left abundant proofs behind him to establish that he was one of the most talented and useful men that England has yet given to India. Of his intellectual character, the most prominent feature was enthusiasm—one of the prime elements of genius; a burning, irrepressible enthusiasm, to which nothing could set bounds, and which communicated itself to whatever came before him. The very strength of his mental constitution, in this respect, was perhaps opposed to his attaining the excellence of a profound thinker; it led him to be carried away frequently by first impressions, and to apply his powers to a greater range of subjects than any human mind can master or excel in. To this enthusiasm was fortunately united a habitude of order, and power of generalisation, which enabled him to grasp and comprehend the greatest variety of details. His powers of perception were impressed with genius—they were clear, vigo-rous, and instantaneous. The extent of his capacity was wonderful, and the number and variety of his acquirements no less remarkable".

James Prinsep could rightly be called a true genius for he combined in himself the qualities of antipodes. The last six years of his life in India were devoted to hourly pursuits of physical enquiries in the morning, chemical analysis in the day-time as Assay Master, engraving the plates for his Journal in the afternoon and numismatics and antiquarian research in the evening. His late evenings were devoted to music and drama. If a man could solve the mysteries of science and antiquities at one time and at the same time devote his energies for liberal arts as well, what else could he be, except a genius extraordinary? Designing and constructing a drainage scheme, a canal, a major arched bridge, a pyrometer for measuring the highest point of heat, a balance for measuring the difference of 3/1000th of a grain, a key for reading the hieroglyphical characters of the Aśokan edicts and Bactrian coins and many more of such diverse nature requiring precision and exactitude did not baffle his brain. The powers of his perception were equally remark-

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able for their vigour and their instantaneousness. "The quickness of his perception was indeed remarkable, for many of his discoveries may be said literally to have flashed upon him", as he described the process in a letter to Alexander Cunningham, "like inspirations, or lightning". Such instantaneous perception is a true mark of genius, and genius is rightly ascribed to James Prinsep, wrote Vincent Arthur Smith.

Tributes were paid to the genius of James Prinsep by the public of Calcutta as well as by the literary and scientific institutions all over the world, with most of which he was connected as an honorary member or correspondent. The Royal Society's President in his annual address (1840) testified to the achievements of its youngest Fellow: "...he was a young man of great energy of character, of the most indefatigable industry, and of very extraordinary accomplishments; he was an excellent assayist and analytical chemist and well acquainted with almost every department of physical science; a draughtsman, an engraver, an architect, and an engineer, a good Oriental scholar, and one of the most profound and learned Oriental medalists of his age.....These discoveries which throw a perfectly new and unexpected light upon Indian history and chronology, and which furnish, in fact, a satisfactory outline of the history of India, from the invasion of Alexander to that of Mohommed Ghizni, a period of fifteen centuries..."

The public meeting held at the Town Hall of Calcutta on 30th July 1840, deplored the death of James Prinsep as a national calamity and passed a resolution to perpetuate his memory by erecting a spacious Ghat.

Memorials to James Prinsep in Calcutta

The Prinsep Ghat, once the most prominent landmark on the left bank of the Hooghly, is now dwarfed by the Second Hooghly Crossing or Vidyasagar Setu, a cabled-stayed 1499ft. long light-weight construction which was inaugurated for vehicular traffic on October 10, 1992 by the then Prime Minister of India, Shri P. V. Narasimha Rao. The Ghat, designed by Captain William Robert Fitzgerald, Civil Architect to the Government of India, in 1840, was erected in 1841. This handsome structure over 100ft. long and over 40ft. in height and width, occupying an area of 1,679sq.ft. with its landing stairs to the river Hooghly, guarded by two stone recumbent lions, was raised by public subscription opened at the Town Hall meeting of 30th July, 1840. The subscription for James Prinsep's testimonial received as on Ist September 1840 stood at Rs.12,000, eclipsing the result of every similar appeal to the public of Calcutta. The subscription amounted to 40,000 Rupees, according to some writers, who claimed that the monument was raised by the natives. Both natives and Europeans contributed liberally to the erection of the monument. Though William Prinsep, an elder brother of James Prinsep, called it Palladian in its architectural style, competent authorities describe it as belonging to the Grecian Ionic order.

The Prinsep Ghat was the landing stage and place of departure of every dignitary who visited the City of Palaces between

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1841 and 1912,including the Governor-Generals and the Czar Nicholas II. The development of air and rail traffic since then relegated the Ghat as a landing stage, leaving it as a historic landmark. The Ghat, after some years of neglect, was restored to its original magnificance by the Indian National Trust for Art and Culture in May 1993, spending, it is claimed, Rs.,14 lakhs, though its cost of erection in 1841 was only Rs.10,070. The monument has again fell into disrepair and the State Public Works Department took off its original roof in June 1999 for substituting it with a concrete one, destroying its original architectural style. Thus this heritage of Calcutta is in course of desecration, if not destruction.

James Prinsep is commemorated in the business district of Calcutta by Prinsep street and Prinsep Lane, two narrow roads, though some parts of the former have been rechristened in the craze for renaming after Independence. Apart from the Prinsep Ghat, Prinsep Street and Prinsep Lane, James Prinsep was also commemorated by the issue of a medallion struck with his head for which also the proposal was mooted at the Town Hall meeting of 30th July, 1840. No Prinsep Medallion seems to have survived in Calcutta, but there is one now in the hands of his nephew Henry in Western Australia.

There is a bust of James Prinsep in Calcutta, which greets visitors to the Museum of the Asiatic Society, situated on the second floor of its new building in Park Street. This bust was begun by Sir Francis Chantrey, the celebrated sculptor, but it had to be done again by Chantrey's assistant H. Weekes, on account of his master's death in 1843. Lord Auckland, the then Governor-General of India, was the highest subscriber to this bust with Rs.300, followed by Prince Dwarknath Tagore, who contributed Rs.200. This bust is not in the Victoria Memorial as claimed by H. E. Cotton in his guidebook to Calcutta.

Conclusion

James Prinsep was a man of many parts who died in the prime of his life at 40. He established his identity whether it was architecture, engineering, painting, engraving, physical science, natural history, town-planning, bridge-building, excavation of a canal, designing of a drainage system, journalism, assay work, meteorology, analytical chemistry, acting, music, epiography or oriental learning. As he has left his imprint in all these fields with credit to himself and everlasting benefit to the public, his memory is cherished by the people of Calcutta, nay the people of India or world at large. The people of India were saved from the impositions of Poddars, Shroffs and others who converted Arcot, Sonat and other rupees into Siccas by James Prinsep for which he recommended to the Government of Lord William Bentinck the issue of a uniform coinage called the Company's Rupee. The issue of the Company's Rupee in 1835 stopped further circulation of those coins mentioned above. All these services were rendered to the people of India and the world at large by James Prinsep free of cost to the Government as in his official capacity he was the Mint Master of Calcutta. The bicentenary of his birth today, the 20th of August 1999, is the fittest occasion

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to recall his life and work. (Extracted from the author's *James Prinsep: Life and Work*, volume I, Calcutta : Firma KLM Pvt. Ltd., released by the State Governor Shri Shyamal Kumar Sen, at the inaugural ceremony of the national seminar of Indian Heritage and James Prinsep, on the 19th August, 1999, at the Indian Museum Exhibition Hall, supplemented from the second volume of the same work in manuscript.)

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JAMES PRINSEP IN BENARES

R. C. Sharma

After closely watching the laudable contribution and tremendous achievements of James Prinsep to the city of Benares, the famous contemporary French traveller Victor Jacquemont rightly addressed him as 'Mr. Benares Prinsep' in 1830. Prinsep did deserve this epithet as a result of his complete dedication and devotion to the holy place of the East. A page of his diary records as under '.....There is one man, however, who compensates for the unsocial disposition of his fellow countrymen - James Prinsep; he devotes his mornings to architectural plans and drawings, his days to assaying at the mint, and his evenings to musical concerts'.[1]

Born at Celsea (England) on Aug. 20, 1799, James Prinsep landed at Calcutta on September 15, 1819 with his elder brother, Henry Thoby after a tiresome and tedious sea journey of four months from England. His assignment was to assist H.H. Wilson who was Assay Master at the Calcutta Mint and whom we know as an Indologist. Soon, the Government resolved to set up two more mints in the upper India, one at Sagar and other at Benares. While Wilson came to Benares, James was deputed to Sagar to help Captain Pregrave, an army officer who held the charge of Sagar Mint but knew nothing about the technology. Prinsep did everything and made the mint as the best unit in India.

When Wilson completed the establishment of the Benares Mint, he returned to Calcutta and James Prinsep was promoted to the post of Assay Master and came to Kashi or Benares on November 26, 1820 at the young age of twenty one.

The maiden visit proved to be the love at the first sight and it did not take him long to become 'Banarsi'. A letter to his sister described the place as under :

'On the road hither I constantly meet elephants, camels and most picturesque hackeries, drawn by superb painted bullocks. The dress of the native here is far more elegant than in Bengal. Instead of the universal white muslin drapery, we have here the gaudiest colours and costumes displayed, especially when any great festival attracts thousands of pilgrims from all the Hindoo world or bathe in our Ganges.'[2] Please note the word our 'Ganges'. This is the real essence of his sentiments. About the *ghats* of Benares he further adds in the same letter :

'This is glorious sight to see the *ghats* of Benares covered with a moving sea of

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heads, studded at small distances with temples of red and white stone, all minutely carved and adorned with flowers, while from a hundred places, cymbals and drums peel forth their strains of adoration. The time too is generally favourable to the exhibition, namely, at an eclipse of the sun or at the rising of the full moon. As soon as the signal is given by Brahmins, in plunge all the bathers rippleing the holy waters for a mile and a half along the shore'.[3] Here, the word 'holy' preceding Ganges suggests the respect which he had for Ganga and Benares from the very beginning of his career in the city.

Yet at another place he gives vent to his thoughts :

'There are few objects more lively and exhilarating than the scene from the edge of the opposite sands, on a fine afternoon, under the clear sky of January. The music and bells of a hundred temples strike the ear with magic melody from the distance, amidst the buzz of the human voices; and every now and then the flapping of the pigeons' wings is heard as they rise from their crates on the housetops, or whirl in close phalanx round the minerets, or alight with prisoners from a neighbour's flock. At the same time the eye rests on the vivid colours of different groups of male and female bathers with their sparkling brass water vessels, or follows the bulls as they wander in the crowds in proud exercise of the rights of citizenship, munching the chaplets of flowers liberally presented to them. Then, as the night steals on, the scene changes, and the twinkling of lamps along the water's edge, and the funeral fires and white curling smoke, and the stone buildings lit up by the moon...'[4]

Prinsep was many in one - as mint expert, as administrator, as enginner, as architect, as artist, as surveyer, as geographer, as astrologer, as orientalist, as epigraphist and as writer. At the same time he was not jack but master of all. He accomplished all such tasks at Benares quite skilfully, brilliantly and rather wonderfully.

He watched the movements of stars and Jupiter's satellites and was able to fix the latitude and longitude of several cities like Benares, Jaunpur, Delhi, Karnal, Meerut, etc. He studied the functioning of the observatory (Vedhaśālā) put up by Rājā Sawai Jaisingh in Mān Mandir at Benares for fixing the site of the monument itself. He contributed an interesting paper with the help of William Cracroft in the *Asiatic Researches* under the title 'Latitude of the Hindu Observatory at Benares'. With great zeal and skill he prepared a detailed map of Benares and it being first of kind and authentic is still sought for and consulted despite a lapse of 175 Years. Bharat Kala Bhavan, Benares Hindu University feels proud to possess it.

The construction of a budge on river Karmanāśā about forty kilometers of Benares was a local requirement. But due to several factors like technical, financial and religious it could not be done. The religious consideration was that people did not want to come in contact with the river water far if they touched it all their merits *(punyas)* were likely to be destroyed since the name

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of the river itself spoke - Karmanasa *i.e.*, which destructs the merits. The efforts were made earlier by Rānī Ahilyābāī Holkar and she even spent a huge amount but the foundation sank and the four piers were taken away by the swift current of flood.

A wealthy trader Putnee Mal who was a philanthopist and aspired for being recognised by the British Government. Despite the recommendation of the Lt. Governor, the title of 'Rai' was refused to be conferred. He then thought of doing something great and impossible for his recognition. He approached James Prinsep to take up the assignment and the latter gladly agreed to meet the challenge. To a great surprise to all, the bridge was constructed with full satisfaction and that too at a lower cost than anticipated. The people and the Government were wonder - struck. The day came when the then Governor General, Lord William Bentinck himself came and admired the accomplishment of the marvellous job. It is not known whether the builder James Prinsep was benefitted or not but Putnee Mal was certainly conferred even the bigger title 'Raja'although he longed for the 'Raiship' only.

The Memoir on the subject reports —

'.....The whole work was thus executed according to James Prinsep's working plans and under his general direction but in all other respects under the personal supervision of Putnee Mal himself, for not a rupee of the money expended on the work passed through any other hands than the Rai's or his sons. The arches (of the bridge) are segments of an exact circle, instead of being of an elliptical form, the circle being preferred for the benefit of uniformity. The bridge upon its completion, was universally allowed to be the most complete, substantial, and beautiful edifice of the kind that had been executed in the British possessions on this side of India'.[5]

The bridge on Karmanāśā bespeaks not only of the great architectural and engineering calibre of James but also of his firm decision and determination *Sankalpasakti* (will power). It was really a big challenge in those days. This also indicates his genuine love for the region and its people whose sufferings were removed when their dream was fulfilled. The construction and completion of the bridge at a lower cost than estimated highlights his character and integrity. He was frequently doing up and down to supervise the construction of the bridge through his main job of Mint at Benares was not to be adversally effected. Several other civil works were executed with the same spirit and passion.

Benares can boast of having one of the earliest drainage systems in India and the credit of the grand architectural and engineering made project of those times goes solely to James Prinsep. To conceive, plan and execute the civil work of that dimension and that too in the ancient and congested town was really a difficult task. It was of course a dire need if the city was to be kept clean. Every year the floods caused havoc and a number of important places, temples, shrines, streets even some market places logged pools of muddy water for long.

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Prinsep prepared a huge plan, got sanction and started execution soon. The big tunnel of 9 'ht and 7' breadth was laid under the houses of which some were of four to five stories. Proposed on April 30, 1825, commenced on 1st Jan. 1926 the herculian work was completed on July 31, 1927. The city got rid of deposits of filth and became really 'Holy' *pavitra* - an adjective which precedes Benares, Varanasi or Kashi. The long sufferings were removed by the young Bodhisattva, Prinsep. This resulted in opening the new horizons for expansion, building and comforts as the base area which remained dirty and neglected was reclaimed and put to multi-purpose use.

Another small but important and serious issue which attracted the attention of Prinsep was the strengthening of Aurangzeb mosque, standing on the river bank. Its foundation had started sinking and the minerets were likely to fall. He took down the entire structure and restored it piece by piece after strengthening the foundation. This work of archaeological conservation was undertaken meticulously and successfully in the early twenties of the 19th century when the Archaeological survey of India was not even born. This was again done at a moderate expenditure.

This and other similar civil works and archaeological conservation at Benares and later decipherment restoration of Brāhmī script remind us of the passion of James, right from his childhood. Once as a boy he prepared a model of a carriage as a toy for his younger brother Augustus. Made of fragile material it broke into several pieces when it fell on the floor. James picked up each and every piece and restored the object in its original shape and for this he had to spend a sleepless night.[6] This was James Prinsep as restorer.

He also took up the work of census of Benares on authentic ground. The earlier census was undertaken in 1803 but it proved to be baseless and unreliable. Accordingly, thirty thousand houses were counted and the number of inhabitants was calculated to be six lakhs. Thus in every house twenty persons were supposed to reside. Proving its absurdity, Prinsep prepared the fresh registers, supervised the work himself and produced the accurate census of the city for the first time. The figure came to be two lakhs exceeding Edinburgh or Bristor and the city (Benares) was almost double than Rotterdam or Brussels in the first quarter of the 19th century. Several other interesting details were also furnished beside counting of heads. These include kind of houses, gardens, tanks, temples, mosques, ruins, castes, trade, etc. Even the annual consumption of eatables from the year 1824 to 1827 was also given.

Prinsep did not rest there, instead he prepared a figure of the influx of people during the special occasions like an eclipse. On May 21, 1826 *chaprasis* were posted at the main approaches of the city like Nadesar, Beniabagh, Jagatganj, Ousanganj and Hanuman Phatak. The pilgrims were counted through pebbles *i.e.*, one stone bit was dropped into a bag when a pilgrim passed by. The same device was adopted at important *ghats* like Rajghat, Gaighat, Kalighat, Mān Mandir, Sivala, Ramghat, etc. The figure of this moving population came

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out to be 55, 000. This must not have been very accurate as there was a chance of slipping of passengers from other *ghats* and places. Since the best precautions were taken we can still leave a margin of about 10,000. These were the results of the first census of the city of Benares.

James Prinsep remained in contact with the *Paṇḍits* and Scholars of Benares. The census work helped him a lot in locating such persons and knowing their status. Even earlier he had founded the Benares Literary Society in 1822. In 1825 he started a journal with views and illustrations of Benares. For augmenting the literary activities in the city he established a printing press which was probably designed by him as the Memoir reveals - 'He set up also a printing press of his own entire manufacture, at which papers of local interest, including some of the proceedings of this Literary Society, were printed under his personal supervision and the sheets were turned out with very credible neatness & typographical skills.'[7] This was the high standard of printing and proof reading 177 years ago at Varanasi but now the correct English proof reading has became a rare commodity in the local presses and the author has to go through the proofs several times before final printing.

His involvement in multifarious activities did not allow the Mint to suffer. The Mint building was repaired and renovated and several improvements were effected. The functioning was also geared up. His experiments in Calcutta Mint found a fertile land for further fructification at Benares and he wrote an article on the measurement of heat and furnace. This was responsible for manufacturing of a pyro-meter, heat measuring instrument. The paper and invention were much appreciated by the Royal Society and he was soon elected as Fellow in 1827 at the young age of twenty eight only. This Banarsi Babu was probably the youngest to receive this honour.[8] Prinsep also introduced a new balance for the Mint and this weighed upto three thousandth part of a grain. The new balance was used in the Calcutta Mint also.

One of the most celebrated tasks of James at Benares was to prepare sketches of his dear 'holy city' during his ten years domicile. This brilliant monograph was later published in 1831and 1833 in lithograph by the Baptist Mission, Calcutta under the caption of *Benares Illustrated in a series of Drawings.* The same has been luckily reproduced by our esteemed friend and learned scholar Dr. O. P. Kejariwal in 1996 with an excellent introduction about the life and works of James Prinsep. If Aśoka was discovered by Prinsep after deciphering the Pre-Gupta Brāhmī script, Prinsep has been rediscovered by Dr. Kejariwal and we are much indebted to him as well as the Vishwavidyalaya Prakashan, Varanasi.

Not only the sketches are important but the Introduction given by Prinsep is also of extraordinary significance. It surveys the history of Benares from the legendary period to 1830 with authentic details shedding new light on several incidents and episodes. He does so as a historian and at the same time expresses his sentiments as an admirer and devotee of kashi when he writes :

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'Religion, however, may be regarded as the permanent source of supply - the staple article of commerce through which the Holy City flourishes and is enriched. There need be no fear of this trade declining, so long as the pious have the faith in the efficacy of a pilgrimage to kashi, and in purifying virtues of the Ganges there - nor while they deem admittance into Shiva's Heaven to be secured to them if they die within the limits of the Punch-kosee (five koss) circle about the town...'[9]

The vision and forecast of Prinsep are very true. Due to several factors the faith has started shaking as we ourselves have polluted the place and the holy river Ganga. There are three basic elements *i.e.*, Kashi, Vishvanatha and Ganga and the three are interwoven. If we neglect or disregard one, the others will also fade. While faith in Lord Siva and the holy city may be treated as religious, spiritual or metaphysical, no body can deny the fact that Ganga has been known for containing the purest water with lot of medicinal values. But due to our own utter negligence and ignorance we are attacking its natural virtues. This has to be taken care of if not for religion at least for the national health, better agricultural yield and cultural sanctity. If these objectives are achieved the net result will be the promotion of domestic and international tourism to a large extent. Prinsep's forecast should be taken as a warning to save our heritage and cultural ethos.

In his descriptive catalogue (monograph) of sketches he does not forget to take notice of local proverbs like -

'Kashi hunde' — Keep on moving at Kashi to see the city, temples, *ghats* going around the holy town - Pradikshina.

'Prayag munde' — Shaving on the confluence of the two most important and sacred rivers - Ganga and Yamuna at Allahabad.

'Gaya dunde' — Extortion by the priests at Gaya (Gayālees).[10]

Whether true or not one has to be reminded while making preparations for a pilgrimage. Unfortunately, for Kashi word 'hunde' has been replaced by 'gunde' by some cunning person or a traveller who had some unpleasant experience at the hands of 'thugs' - cheaters. We are aware of the facts that 'thugee' - cheating became a big menace in the large part of the country in the 19th century and we come across some portraits of 'thugs' or robbers in the company style of paintings.

On the historical front about Benares, James writes : 'Of the political state of Kashi nothing further is known until the 11th century. According to some of the Mohammadan accounts, it was governed by a Raja Bunar at the time of one of Mahmood's invasion, or in A. D. 1017, one of his generals penetrated to the province, and defeated the Raja. The Ayeen Akburee asserts, that Mahmood himself advanced to Benares and made some converts. On the other hand, no mention of the conquest of Benares by Mahmood or his officers occurs in Farishta, nor in the authorities consulted by Colonel Steward....'[11]

This account suggests that Prinsep was

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very analytical while writing the history although he had a great regard for the city. The name of the king Bunar may perhaps suggest the etymology of Benares which was sometimes written as 'Bunarus' as seen in the first sketch of Prinsep's album. About the *ghats* for which Benares is particularly known, he observes :

'Let it be born in mind, that upon ghats are passed the busiest and happiest hours of every Hindoo's day : bathing, dressing, praying, preaching, lounging, gossiping, or sleeping, there will he be found. Escaping from the dirty, unwholesome and confined streets, it is a luxury for him to sit upon the open steps and taste the fresh air of the river, so that on the ghats are concentrated the pastimes of the idler, the duties of the devout, and much of the necessary intercourse of business. In no city of the world is the population invited to a single street or place of recreation by so many attractions, and the inhabitants of Benares are justly proud of the beauty and spaciousness of the accommodation, provided for them at the river's side. A native proverb sums up the attractions of Kashi in three words : *'Ranr, sāna, our seerhee'* which may be aptly translated, 'Belles, Bulls and Broad Stairs'.[12]

The *ghats* and temples have been attracting the pilgrims, tourists and the local citizens since their foundation or beginning. These have also invited the artists, sketch makers, painters and photographers for their presentation and appreciation. Even before Prinsep's sketches were drawn by Daniels and others. There, however, appears the basic difference between Prinsep's and others'. The presentation of others seem to follow the style of landscaping while Prinsep is quite meticulous and almost exact in furnishing the architectural details blended with the life of the city. It is for this reason that his work is more authentic and appealing. This was indeed very great service rendered by James to the city. He was conversant with each street, temple, Shrine, monument and places of interest. His vast knowledge, experience, dedication and devotion have been well reflected in his wonderful illustrations. He actually knew the pulsating valve of the place and this fact has been splendidly displayed in his drawings. It is not only an album of pictures but it really unfolds several known and unknown layers of Benares at the mundane and supermundane planes.

The northern outskirts of Benares was developing in the western fashion in the vicinity of Secrole, housing the courts, treasury and mint but Prinsep is not appreciative of these buildings. He thinks them just the 'plain modern structures of brick and mortar. On the other hand, the building material used in the *ghats* and temples is a fine compact sandstone, quarried in the hills behing Chunar and Mirzapur—' The sharpness and delicacy of the carving on many of the temples is deservedly admired....'[13]

At the same time he cautions for unplanned construction of *ghats* which may lead to the 'incurable injury. The depth of water in front of the town, in the dry season, is more than 50 feet, and the freshes of September add 42 feet to this level. The breadth of the Ganges is 600 yards at low water level and a little more than half a

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mile in the rains. The splendid stream forms a bay, indenting the front of the town, so as to display its picturesque beauties to great advantage.'[14]

Despite his occasional annoyances over negligence of people and unplanned construction by builders, Prinsep always paid tributes to the grandeur of Kashi :

'Benares is a real town, extensive and of stone. The ghats on the banks of the sacred Ganges are really superb. A few sketches will however, do much more in the way of description than all I could say of the narrow streets and painted houses and picturesque walks; and equipages, dhoolies, camels and elephants, things you never seen in Calcutta and utterly beyond your powers of correct imagination.' 15

This was the outburst of his emotions about Kashi so dear and loving to him. No individual person has done so much for Benares in different fields as Prinsep. This he did at the cost of his service career. When he was over whelmingly involved in multifarious works of public utility some of his colleagues were trying to play mischief against him. Unmindful of all these bickerings the young James continued his mission with great success and remarkable achievements.

When Government of India decided to close the Benares Mint in 1830 James had to return to Calcutta where he engaged himself in the study of Indian coinage, oriental studies and on top of all the Decipherment of old Brāhmī script which brought further laurels to this super genius, Benarsi Prince. The life span of this true karmayogi was cut short due to over-work on April 22, 1840 at the age of forty only.

We must pay highest tributes with a sense of deep gratitude in his bi-centenary year 1999. Not only Benares and Calcutta but the entire country is indebted to him. James has been the shining gem in cultural history of India. The best homage will be to restore the early glory of Kashi for which Prinsep sacrificed everything.

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5. *Family Memoir*, p. 30.
6. *ibid.* p. 16

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   'Of the Principle of this Pyrometer it will be sufficient here to say that it was based on the melting point of different metals and assuming ten degrees of difference between silver and gold, and 100 degrees between gold and platina, the intermediate stages were marked by decimal and contensimal admixures of the two metals. Thus by inserting in the furnace to be tested, cuples with beads of several proximate degrees, the intensity of heat was determined by the number of these reduced fusion. But the most original and ingenious part of the essay was that detailing the experiments by which the relative melting points of the four metals and of their graduated mixtures, were composed of the scale of ordinary thermometers and settled in degrees of Fahenheit. The calculations for this purpose are based on the expansion of atmospheric air under different temperatures, and by their result an important correction was made in the deductions of Wedgwood and Daniel, and the scale of James Prinsep has not been impunged or improved.'
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JAMES PRINSEP : A LITTLE KNOWN INCIDENT OF HIS LIFE

O. P. Kejariwal

There was time not too long ago when historiography was practically an unknown discipline in India. Even in the 60s, the eminent historian of modern India, C. H. Philips, could remark in his preface to the book *Historians of India, Pakistan, and Ceylon* that "Historians who have devoted themselves to the study of the peoples of the subcontinent have shown little awareness, and little tendency to evaluate the work of their predecessors so that the student seeks in vain for even a single published article in which the character of their work is examined."[1] Since then there have been books and articles on Indologists and historians written by the British as well as Indian historians. Of these, William Jones has perhaps been the most written about Indologist of all. And yet, when one goes through the corpus of biographical literature on Sir William Jones, one immediately notices the fact that none of his biographers has had any adverse comment to make about his character or his personality. Now we all know that no human being can be perfect and yet William Jones has towered over his biographers and emerged as a person without any blemish. After his death there was a minor reference to his being a miser in one of the obituary notices. But then this criticism was ill placed for we know it for a fact that William Jones donated his entire royalty from his work *Sakuntala* for the relief of debtors in prison. There are other stories of his life which go to show that such pieces of criticism are totally unfounded.

Yet another Indologist about whom noting adverse has been said is James Prinsep although not much has been written about him till now. In his short life of 41 years, he stands out as perhaps one of the greatest geniuses ever born. His was a multi-dimensional personality having major contributions to make in the fields of epigraphy, numismatics, physics, astronomy, architecture and painting, to mention some of them. In all this, James Prinsep stands out as a character without a blot. In fact, when in 1830 the French traveller Victor Jacquemont visited Benares and had occasion to attend two dinner parties, the only person he found sober was James Prinsep. "There is one man" wrote Jacquemont, "who compensates for the anti-social disposition of his fellow countrymen — James Prinsep; he devoted his morning to architectural plans and drawings, his days to assaying at the Mint, and his evening to musical concerts."[2]

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Indeed, James Prinsep's ten year stay in Benares (1820-1830) was so full of achievements that it can be said with some certainty that no individual has contributed so much to the holy city as James Prinsep. Having been appointed as an Assay Master in the newly set up Mint at Benares in 1820, James Prinsep not only improved the Mint building but took up several architectural projects of great importance. He repaired the minarets of Aurangzeb's mosque which were in danger of falling down on the bathers in the river killing some of them. This he did by taking down the minarets brick by brick, strengthening their foundations and restructuring them so that they stood perpendicularly. He also constructed the bridge over the river Karmanasa. In fact, efforts to build this bridge had been going on since Ahilya Bai, the widow of the first Holkar, but because of the turbulent waters, whatever construction came up was soon washed away and the task given up as an impossible one. It was James Prinsep who made the impossible possible within less than two years. The most outstanding architectural achievement of James in Benares, however, was the construction of the underground drainage system, which still serves the city. It is remarkable that the entire work was done without disturbing any of the structures some of which were seven-storeyed high and in the most populous part of the city — almost a miraculous feat for the time. Besides these, he undertook so many civil works that as his biographer said : "To extend the catalogue to a detail of the roads, bridges, drains and other works of every variety of description, which were put in hand and completed would fatigue the reader."[3]

Besides these, James Prinsep conducted the first modern census of Benares, prepared its first map and also fixed the astronomical position of the city by calculating its latitude and longitude. He also established the first Literary Society there. With so much to occupy his attention together with the number of projects which he undertook for the city, and which at times demanded his presence at the various sites, it is possible that James' duties at the Mint were somewhat neglected or overlooked. Thus, during this period there was a serious case of embezzlement of funds at the Mint. The outlines of this case have been pieced together for the present paper from a document extremely worn out, torn in several places and patched up with plain paper and preserved in the State Archives of Allahabad together with two letters of James' contemporary and rival John Curnin, one to William Bentinck, dated 14 May 1835,[4] and another dated 2 June 1845, to the Deputy Chairman of the Court of Directors of the East India Company, Mr. James Weir Hogg[5] and the records in the National Archive relevant to the case.

The outline of the case is as follows :

John Curnin was employed at the Mint in Benares and at one time dreamed of being appointed Secretary to the Mint Committee over James Prinsep. When he did not succeed, he carried venom in his heart to the end accusing not only James Prinsep but his brother Henry Thoby and even Ram Comul Sen of complicity and corruption.

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The entire episode began with one Dr. Yeld who was the Mint Master at Benares when James was the Assay Master as well as Secretary of the Mint Committee. Dr. Yeld, while holding this office, fell into the habit of speculation, especially in indigo and, over a period of time, landed himself heavily into debt. He then sought to pressurize the Treasurer of the Mint to lend him large sums of money. When the latter refused to oblige, Dr. Yeld started misappropriating the Mint funds.

The Mint Committee whose job was to examine periodically the Mint records discovered the extensive defalcations and this resulted in Dr. Yeld committing suicide leaving behind very little money and assets so that the Government gave up its claim to "what trifling property was left by him in favour of his heirs."

Curnin now accused James Prinsep as the person responsible for the entire episode. According to him, in 1833 the Court had the question of this misappropriation of funds under consideration as also the appointment of James Prinsep as Assay Master of the Mint. The Court decided not to confirm James as Assay Master until he satisfied the Court that he had no knowledge of Dr. Yeld's proceedings.

This indeed was a fact. In a letter to the Mint Committee dated 31 December 1833, the Officiating Secretary to the Government in the Finance Department, G.A. Bushby wrote : "You will communicate to Mr. James Prinsep the displeasures expressed by the Hon'ble Court at his conduct in the Proceedings of the Mint Committee at Benaras... and will call upon him for the explanations required by the Honourable Court."[6]

The Court's letter was harsh. It said that "Yeld could never have carried on the system of fraud... had not the most obvious precautions been neglected", and put the blame squarely on James Prinsep. "It was his duty", the Court observed, "to have rendered the most efficient aid and advice to the Committee... for the protection of our interests, (but) instead of doing this, he was throughout the proceedings which led to the discovery of the embezzlement more anxious to explain away what appeared suspicious in Dr. Yeld's conduct." The letter levelled a still graver charge against James when they noted "another circumstance which manifests that Dr. Prinsep was culpably inattentive to the interests of his employers..." Willing however, to give James a chance to explain his conduct, they kept in abeyance their confirmation of James' position as the Assay Master of the Calcutta Mint."[7]

James' explanation — fifteen pages long — brings out all his pain and hurt at being thus accused. He pointed out that "this is the first occasion that it has been my misfortune to incur the slightest expression of reprehension for my conduct as a servant of the Hon'ble Company." He then went into details of various accusations justifying his stand. He even cited the certificate of His Majesty's Assay Master, Robert Bingley who said : "Mr. J. P. possesses other valuable acquirements which I confidently hope will render him a valuable servant in the Company's service."[8]

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This, indeed, turned out to be true. As already stated, James Prinsep had by this time single-handedly enriched the holy city of Benares through numerous architectural accomplishments and also resuscitating the city's literary spirit. All these were fairly well known and had gone down well with the local authorities. His name at the time stood in the highest esteem among the Company's servants. Also, by this time (1834), he had started making his mark in the affairs of the Asiatic Society in Calcutta as well as in the Calcutta Mint working towards reform of the Company coinage.

Thus while forwarding James' explanation to the Home authorities in London, the Vice-president in Council of Fort William, Sir C. Metcalfe expressed the conviction that "Mr. Prinsep has amply vindicated his character from the impression of doubt in the minds of the Hon'ble Court more by the absence of specific information on the points alluded to by them than by any suspicion of the purity of Mr. Prinsep's motives."

Then, in perhaps a most unusual prayer made by a bureaucrat on behalf of another, Metcalfe added : "To your Honour in Council, already well acquainted with Mr. Prinsep's merits, it may not be necessary for us to point out with an expression of unqualified praise his course of distinguished service, but we are deeply anxious in the present case affecting Mr. Prinsep's reputation, in the eyes of Hon'ble Court of Directors, to record for their favourable consideration our estimation as well as his uniform uprightness of character, as of his eminent scientific attainments, the more remarkable for the modesty with which they are borne and at all times made available for the public service.[9]

The Home authorities, in spite of such a strong recommendation did not seem fully satisfied. Obviously the case was discussed extensively among the Directors. According to Curnin, one of the Directors (Curnin does not give the name) even favoured the demotion of James and Curnin's appointment in his place.

Ultimately, however, James *was* confirmed in his appointment as Assay Master although "with some reluctance and more with the view of not wounding the feelings of other than on the merits of the case."

Giving his own version of the entire episode, Curnin felt that it was an unfair judgement for several reasons. According to him, Dr. Yeld was connected with the House of John Palmer, then the leading Agency House in Calcutta, in which two Prinsep brothers (William and George) were partners. Further, about the involvement of Ram Comul Sen, who was considered close to James Prinsep, Curnin wrote to Hogg, "Your long residence in this city and the intimate knowledge which you must have acquired in it of men and things must have enabled you to know that there is no department of the Government of Bengal into which a native can have access that, that native does not in some way or the other convert to his own advantage... This being the prevailing blot on the native's character it is not to be supposed that the Mint in which so much may be picked up he was ever free from its influence..." This remark must be seen

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against the general attitude of the colonial rulers towards the 'natives'. According to Curnin, Ram Comul Sen also was not above this weakness or charge. He accused Ram Comul, who was the Bullion Keeper in the new Mint, of conspiring to get another Indian, Luckinarain Gupta, replaced by his own son-in-law in the Lamination Department of the Mint in 1835. According to Curnin, Luckinarain Gupta had a European woman as his mistress. Ram Comul Sen preyed upon the mind of Mr. Saunders against Luckinarain on this ground and soon Luckinarain was removed from employment. Ram Comul then manoeuvered to get his son-in-law appointed in this position. Curnin also claimed to have in his possession a copy of a letter from Ram Comul Sen to his son-in-law, one sentence of which read, "There is no harm in drawing any perquisites if possible provided you can keep your accounts clear and evade danger." This sentence, in fact, has been underlined by Curnin. Curnin then gives the functioning of the Lamination Department of the Mint in detail outlining the way by which money could be made by the Laminator. A few days after Luckinarain Gupta was removed as Laminator, Ram Comul Sen further conspired to have the Weighman Benund (sic) Beharee Paul removed from his post "from no other feeling than that he would not be as favourable as formerly when weighing for his son-in-law." On his removal, Benode Beharee Paul filed a representation with the Mint Master (Col. Forbes), who subsequently put it up to the Mint Committee, in which Gupta offered to laminate at a lesser amount of melting loss and to give ample security as to the way (in which) the entire work would be done."

This representation was answered by James Prinsep in which he turned down Benode Beharee Paul's request. Not only this, James Prinsep forwarded Paul's representation to the Governor-General, Lord Auckland, and got an answer signed by his brother H. T. Prinsep where he wrote "I am directed to inform you that the Right Hon'ble the Governor of Bengal will not interfere with the determination of the Mint Committee in this matter."

Later, it seems that Curnin himself was asked to assess the losses made in the Lamination Department of the Mint. The report estimated that the melting losses of the Mint in 1838-39 amounted to Rs. 1,16,616/-, a very substantial amount at the time. According to Curnin, every effort was made not only to suppress the report but he himself was removed from his office. This, according to him, was done to protect the memory of James Prinsep "from the infamy which his previous act had attached to it." According to him, James' brother, Henry Thoby, played a significant role in the whole matter and even utilized his closeness to Lord Auckland to suppress the report. So bitter was Curnin that in his letter to James Hogg he wrote with extreme bitterness. "...if unredressed, I hold it those parties will be arraigned and yet condemned as unworthy of either mercy or forgiveness by the almighty God irrespective of the posts filled by them here. Theirs is not the effect of ignorance but of design; and I have not the

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charity to say God forgive them." He ended the letter by entreating "I will entertain the ardent hope that for the love of God, of justice, of truth, you will do this act of mercy and of justice."

The postscript to this episode was that John Curnin did become the Secretary of the Mint Committee after the death of James Prinsep. But to get an entire picture of the episode we must go back a little earlier to John Curnin's letter to Bentinck written on 14 May 1835. In this letter, written two months after Bentinck's departure from India, every effort has been made to poison Bentinck's mind against the Prinsep brothers then in India. It is well known that Henry Thoby Prinsep, the Chief Secretary to Government during Bentinck's time was the one most opposed to Mecaulay's Minute on Education which was ardently supported by Bentinck himself. "On the very day of your departure", wrote Curnin to Bentinck, "the most violent and malevolent attack that could have been made upon an individual was made upon you by George Prinsep... On the next day his brother Thoby was sworn in a Member of Council and I might now with some justice say that we have the Prinsep's government. They are carrying everything before them."

The important point in this letter is that Curnin admits, "Ever since my arrival here I was anxious to be appointed Secretary to the Mint Committee... so I should have a voice, and a controlling power in the affairs of the Mint whereas I am but the mere clerk of Mr. Prinsep." Curnin's remarks on the marriage of the Prinsep brothers and also on James Prinsep's request for a house at the Mint with an Assay Office for him shows he carried his disappointment, frustration and bitterness to personal attack. Ever since then there is evidence that Curnin constantly worked against James Prinsep. James had some idea of Curnin's designs against him and wrote about it to H. H. Wilson in England. In his reply Wilson commented : "Your account of Curnin is exactly what I should have expected, but I should be afraid of something behind all his politesse, and I hope he has not, and may not, be troublesome when he grows bolder."[10]

But bolder and troublesome Curnin did indeed become. Because of his complaint about Yeld's embezzlement of funds in which, according to him, James was an accomplice, there was an inquiry set up in the matter. It was concluded in 1849 with the Collector of Benares D. F. McLeod writing his report :

A somewhat indignant minute of Mr. James Prinsep, a principal Member of the Mint Committee; expressing his opinion that the members of that Committee rather than the subordinate officers of the establishment, should be held responsible for the amount, which minute although afterwards partially retracted by him; shows distinctly his conviction that the latter had been guilty of no appropriation — and I know that Mr. Morrison, who was Collector during the progress of the case in the first instance; is most distinctly of opinion to the same effect.[11]

This is the only incident in James' life

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which was an unsavoury one in a life full of compassion and achievements. Although at this point of time — almost 150 years removed from the incident — and for paucity of proper records, it is difficult to get to the entire truth of the matter. In spite of this two things do stand out and with which we can conclude the entire episode : the first that Curnin from the beginning was a jealous and a bitter man looking for an opportunity to do harm to James as a means to enhance his own career prospects and, secondly, that it is possible that James overlooked the functioning of some aspects of the Mint being busy with a horde of projects which really interested him. He seems to own the responsibility in his report cited by McLeod but one finds it difficult to believe that he indeed would have indulged in either favouritism or functional impropriety especially so because this seems to be the only incident of its kind during his stay in India for about twenty years.

In what can perhaps be regarded as the final episode in this entire unpleasant affair is that there seems to have been an assuaging of feelings in John Curnin also, as he figures as one of the voluntary donors towards the erection of James's bust in the Asiatic Society.[12]

J. Curnin, Esq. gave Rs. 100/- one of the highest subscriptions towards this noble cause!

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JAMES PRINSEP & THE EARLIEST MUSEUM OF INDIA

Shyamalkanti Chakravarti

The oldest museum of India was born in the cradle of the Asiatic Society. On February 2, 1814, Dr. Nathaniel Walliach, a Danish botanist, wrote a letter to the council of the Asiatic Society proposing for the establishment of a museum at which subsequently he served as a Honorary Curator. The chequered history of the origin and growth of the Asiatic Museum through Imperial Museum to the Indian Museum for a period of sixty-four odd years is no less significant.

James Prinsep was elected as a member of the Asiatic Society of Bengal on July 7, 1830 proposed by H. H. Wilson and seconded by Sir Charles Edward Grey, then President of the Society. He took over the charge of Secretaryship in the year 1832 and edited the *Journal of Asiatic Society of Bengal* during 1833 and 1838. The elevation of the museum into a unique national institution is the most important achievement of the Society during his tenure. The collection of antiquities and the specimens of natural history during the years surpassed all previous records. In the Annual Report of 1833 he mentioned : "the plan of increasing the museum has remained incomplete for want of means, as the rooms on the ground floor cannot be adopted for the purpose without terracing them anew and enclosing the arched openings to the north." The Society's museum became the repository of specimens from all over South East Asia and far off countries. The systematic arrangement and study of the collection in the museum received a momentum during 1835-36 under the supervision of a paid curator, a professional naturalist. Prinsep and Sir Edward Ryan, then President of the Society, gave a serious thought not only to foster a spirit of research but tried to convince the authorities in the Government to declare it as a national institution. Their representation to Lord Auckland, the Governor General of India said that "the Society never had a more flourishing list of contributing members, nor was it ever more actively engaged on the multiplied objects at its attention..... it may be allowable to say the metropolis of British India has had the germs of a national museum as it were planted in its bosom". During the tenure of Prinsep, Society's museum was looked after by Dr. John Thomas Pearson from July 1833 to March 1835 as acting Curator. In April 1835

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Dr. J. T. Pearson took over the charge of the museum. The museum suffered bad days due to insufficient funds to pay the salary of the Curator and it was F. M. Bouchez of Chandenagore appointed assistant to the Curator who with the help of his nephew discharged the routine duties of the museum. In January 1838 Lieutenant Markham Kittoe was appointed Librarian and Curator of the Society. In May of the same year Dr. George Evans was appointed Curator of the Society's museum who handed over the charge in March 1839 to Dr. William Jameson.

James Prinsep had a good understanding with the Curators of the museum and also the staff - the Head Taxidermist, Assistant Taxidermist, two carpenters and two farashes. The Curator had to serve the museum at least two hours a day and submit monthly reports to the Committee of Papers. The period of James Prinsep in the museum witnessed some interesting incidents. The collection have been divided into (i) Archaeology, (ii) Antiquities, (iii) Ethnology, (iv) Geology, (v) Palaeontology and (vi) Zoology. The collections of Osteology, Ichthyology, Herpetology, Ornithology, Entomology and Botany were placed under Zoology. A fine image of Buddha dug out from the neighbourhood of Kabul and presented to the Museum in 1834 was the most important addition during 1833-1841. Besides these, another important acquisition received by the Society between 1833 and 1841 was an Egyptian mummy brought from the tombs of King of Gourvah. It was Dr. George Evans, a medical surgeon and then Curator of the museum who dissected for the first time mummified bodies of Tringa birds under the patronage of James Prinsep. James Prinsep's time in the Asiatic Society had witnessed participation of a group of first Indian contributors to the Museum. A list of donors in 1832 records the names of forty-nine contributors of which six were Indian, five of them being Bengalis - Maharaja Kalikrishna Bahadur, Radhakanta Dev, Mathuranath Mullick, Shiv Charan Das and Ramkamal Sen. The only lady in the list was Begum Samru of Sarghana state near Delhi. Babu Ramkamal Sen, grand father of Keshab Chandra Sen contributed the indigenous musical instruments and the cultural artifacts related to the *charak* festival of Bengal. The museum collection was enriched by rare and valuable antiquities, weapons of war, musical instruments and articles of daily use, fossils, minerals, rocks, even some fossilbones from Calcutta. In 1837 Dr. T. Cantor presented to the museum fragments of fossilised bones extracted from the artificial clay at Rangafulla below Diamond Harbour. Skeletal remains of animals, fishes, snakes, birds were also collected for the museum. James Prinsep, was not a silent observer, he had studied some specimens and published notes on them. He had incidentally wrote a note on the chemical analysis of the coal specimens received by the museum no sooner than they reached the Assay department of the Calcutta Mint. He also published his analysis on copper core from Nellore with notice of the copper mines of Ajmirh and Singhana in 1835. He also wrote a note for the catalogue of the Siwalik fossils in the museum which were received in

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April 1836 and exhibited in the museum with proper lighting arrangement on 6th April, 1836. But this year was unlucky for both the museum and James Prinsep since a serious theft had occurred the first ever of its kind in the museum of the Asiatic Society.

In the proceedings of the Asiatic Society, dated 4th January, 1837, he stated "Depredations to an unfortunate extent have been lately made by some of the servants of the house, in articles ornamented in silver and gold; which the Librarian partly attributes to the opening of the rooms at so early an hour. Inquiry is now pending at the police, and measures must be devised for better security of our increasing property." The museum during Prinsep's days witnessed a slow growth of the ethnological, archaeological and antiquity galleries as compared to those of Palaeontology and Ornithology. But care was taken to see that scientific and educative value of the museum was not sacrificed at the cost of visual impact. James Prinsep's greatest contributions to the museum movement in India was his zealous mission to uplift the museum as an institution of national importance.

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A list of Indian Metal Sculptures in the Archaeology Section of the Indian Museum

Dibakar Das & Anasua Das

Metal-casting is one of the most ancient and splendid crafts of India and has always been regarded as among the highest forms of art. Indian bronze (an alloy of different metal, mainly copper) images were made by the lost-wax process known as *cireperdue* in French. After the mould had been broken open much of the detail was added by chasing and chiselling with a final polishing. This smaller images were cast solid, while the very large ones were hollow; but all were fashioned strictly according to the iconographic prescriptions of the medieval Silpa texts and, therefore, exhibits a close affinity with their stone counterparts though they are generally smaller because usually intended for private worship. Also, particularly in the South, they had to perform an added function as *Utsava Vigrahas*, images taken out during religious processions so that those who could not visit the temple might behold the sacred image of the divinity and thus attain religious merit.

This art of bronze casting reached its height of expression during the period, A.D. 9th-12th centuries, though it had a long tradition behind. A few bronze sculptures from the Harappan culture (*c.* 2500-1500 B.C.) reveal the perfection of skill of the Indian craftsmen of that remote age. A figure of a mother goddess excavated from Adichanallur in South India is a further early item belonging perhaps to the iron age (*c.* 1000 B.C.).

From the historical period onwards the development of the art of metal casting in India is a continuous process and can be studied at length. However, the actual specimens are not many till the medieval period when we find several hoards in this country.

The fine Gupta tradition of sculpture in stone and bronze further developed in eastern India under the patronage of the Pala rulers (*c.* A.D. 750-1119). The Pala type is marked by slim and graceful figure, extravagant jewellery and conventionalised decoration. The faces are sharp with almost aquiline noses, strongly defined lips and eyebrows and half-closed eyes. Bronzes produced during this period in Bihar and Bengal bespeak of perfection of the Pala sculptors such as Dhiman and his son Bito Pala in the reign of Devapala in the 9th century. The Pala Kings, Buddhist by faith, were tolerant rulers and their sculptures illustrate

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both Buddhist and Brahmanical pantheons. The monastery of Nalanda situated almost 90 kms. south-east of Patna, the capital of Bihar, was a great seat of learning and a university of international repute in those days. Metal casting was one of the subjects in the studies and a school of metal casting which is a class by itself was emerged. A remarkable hoard of more than three hundred bronzes have been found through excavation at Nalanda which bespeaks of perfection and the quality that the Pala sculptors could achieve. The influence of the Pala metal casting was far reaching and was even felt in the art of Java as also that of Nepal. Another remarkable hoard of about 240 bronzes discovered at Kurkihar in the district of Gaya in Bihar bears close affinity to the Nalanda bronzes and displayed vividly the examples and the artistic perfection of the Pala school, although the bronzes from Kurkihar had their own characteristics. In Bengal several bronze sculptures have been discovered which, though followed the tradition of Nalanda, have their own variations. Jhewari in Chittagong now in Bangladesh, has yielded several such icons which show some unique forms of regional characteristics of the Pala tradition. The bodies of the deities are often well formed with contours prominently shown. They however lack the soft gracefulness of the images of the Pala school of metal sculptures.

Close to the Pala dominion, Orissa, under the suzerainty of the Eastern Chalukyas (*c.* A.D. 624-1061), played an important role in the cultural activities, especially in building the monumental architecture. Metal Sculpture from Orissa during the period also reflects a peculiar admixture of the art traditions of the Palas and the Eastern Chalukyas.

The reign of the mighty Chola Emperors (*c.* A.D. 846-1173) who succeeded the Pallavas (*c.* A.D. 325-897) in South India ushered in a period of vigorous artistic activities. Bronze casting had by then become a highly specialised craft, the images of Brahmanical gods, goddesses, saints and royal donors produced at this time bearing evidence to the remarkable skill of the Chola sculptor. Figures are gracefully poised, with soft curves and modelled contours, faces are pleasing and rounder in shape. The ornamentation is delicate, the draperies less heavy and the sacred thread is apt to be sinuous. Fan-shaped projections can be noticed on the armlets, at the elbow-joints while flames appear on Vishnu's emblems. Chola period thus is to be rightly regarded as the epitome of bronze casting in India. The ba-lanced poise, graceful rhythm and serene repose embodied in the masterpiece of the Chola sculptor. Bronzes are a glowing tribute to the artistic skill of the master Chola artists. In their hand, soft shapely contours and a high finish further enhance the ele-gance of the form. Countless images of Buddhist and Brahmanical sculptures in bronze are now preserved in most of the museums in India and abroad.

The noblest creation of the artistic genius of South India during the period is Siva Nataraja which illustrates the process of world creation and dissolution in the terms of rhythmic dance. A fine example of this great art work belonging to *c.* A.D. 12th century now on display in our gallery repre-

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sents the deity symbolically combining in himself the three aspects of the Hindu Trinity - Brahma, Vishnu and Siva, causing the eternal cycle of creation, preservation and destruction.

The Archaeology Section of the Indian Museum preserves a very good number of metal sculptures of Indian origin from the earliest to the medieval period, a list of which is being presented here.

Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
1.	9416/A24272	G11/46(R)	Bronze Buddha, Seated 15.4 × 8.4 cm.	Nalanda, Bihar
2.	9417/A24291	G1/14 (R)	Bronze Buddha, seated 17.1 × 8.8 cm.	Nalanda, Bihar
3.	9418/A24277	G1/7 (R)	Bronze Tara, seated 15 × 7.6 cm.	Nalanda, Bihar
4.	9419/A24284	G1/17 (R)	Bronze Tara, standing 21.5 × 9.1 cm.	Nalanda, Bihar
5.	9420/A24274	G1/6 (R)	Bronze Avalokitesvara, seated 14 × 7.6 cm.	Nalanda, Bihar
6.	9421/A24281	G11/61 (R)	Bronze Buddha, standing 23.6 × 9.3 cm.	Nalanda, Bihar
7.	9422/A24286	G1/9 (D)	Bronze Tara, standing 18.8 × 7.4 cm.	Nalanda, Bihar
8.	9423/A22889	G11/68 (R)	Bronze Tara, standing 19.7 × 5.6 cm.	Nalanda, Bihar
9.	9424/A22890	G1/19 (R)	Bronze Tara, Seated 10.1 × 6.8 cm.	Nalanda, Bihar
10.	9425/A22891	G1/18 (R)	Bronze Jambhala 8.2 × 5.9 cm.	Nalanda, Bihar
11.	9426/A24292	G1/28 (R)	Bronze Buddha, Seated 19.5 × 14.1 cm.	Nalanda, Bihar
12.	9427/A24280	G1/11 (D)	Bronze Buddha (gilt), seated 23.5 × 12.1 cm.	Nalanda, Bihar
13.	9428/A22886	G11/44 (R)	Bronze miniature stupa 10.4 × 4 cm.	Nalanda, Bihar
14.	9429/A24278	G1/2 (R)	Bronze Maitreya, seated 14.3 × 9.7 cm.	Nalanda, Bihar

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
15.	9430/A24285	G1/20 (R)	Bronze Prajnaparamita, seated 12.4 × 7.7 cm.	Nalanda, Bihar
16.	9431/A24275	G1/10 (R)	Bronze Buddha, seated 20.2 × 11.7 cm.	Nalanda, Bihar
17.	9432/A22892	G1/16 (R)	Bronze Bhrikuti, four-armed, standing 14.8 × 7.5 cm.	Nalanda, Bihar
18.	9433/A24283	G11/66 (R)	Bronze Buddha, standing 36.2 × 11.8 cm.	Nalanda, Bihar
19.	9434/A24271	G1/13 (R)	Kubera (Manjusri ?), seated 18.3 × 11.8 cm.	Nalanda, Bihar
20.	9435	G12/32 (R)	Bronze four-armed, standing deity, (Balarama) 33.3 × 11.5 c.m.	Nalanda, Bihar
21.	9436/A24276	G1/1 (D)	Bronze Buddha, standing 38.5 × 18.5 cm.	Nalanda, Bihar
22.	9437/A24282	G1/24 (R)	Bronze Vishnu, standing 15 × 6.3 cm.	Nalanda, Bihar
23.	9438/A24293	G1/4 (R)	Bronze Buddha, seated 29.2 × 20.5 cm.	Nalanda, Bihar
24.	9439/A24294	G1/8 (D)	Bronze Avalokitesvara, standing 21.4 × 8.2 cm.	Nalanda, Bihar
25.	9440/A24784	G1/12 (D)	Bronze Buddha, seated 24 × 12.3 cm.	Nalanda, Bihar
26.	9441/A24279	G1/3 (R)	Bronze Tara, seated 14.6 × 10 cm.	Nalanda, Bihar
27.	9442/A22893	G11/69 (R)	Bronze Avalokitesvara, standing 14.8 × 4.8 cm.	Nalanda, Bihar
28.	9443/A24273	G1/5 (D)	Bronze Surya, standing 22.5 × 12.5 cm.	Nalanda, Bihar
29.	9444/A24287	G1/21 (R)	Bronze Avalokitesvara 12.9 × 8.9 cm.	Nalanda, Bihar
30.	9445/A24290	G10/6 (D)	Bronze Buddha, seated 22.8 × 14.7 cm.	Nalanda, Bihar

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
31.	9446/A24288	G1/15 (R)	Bronze Vajrapani (Manjusri ?), seated 10 × 7.4 cm.	Nalanda, Bihar
32.	9447/A24289	G1/22 (D)	Bronze Avalokitesvara, six-armed 23.2 × 16.5 cm.	Nalanda, Bihar
33.	4551/A24364	G4/2 (D)	Bronze Vajra Tara, 20 × 11.9 cm.	Patharghata, Bhagalpur, Bihar
34.	4552/A24365	G1/26 (R)	Bronze Bhairava (Trailokyavijaya ?) twelve-armed, standing 15.6 × 11.4 cm.	Patharghata, Bhagalpur, Bihar
35.	4553/A20335	G11/127 (R)	Pedestal with back slab of an image (Inscribed), Bronze 15 × 7.9 cm.	Patharghata, Bhagalpur, Bihar
36.	4554/A20351	G11/23 (R)	Bronze Buddha, inscribed, seated 15 × 7.9 cm.	Patharghata, Bhagalpur, Bihar
37.	4555/A22894	G11/80 (R)	Bronze Avalokitesvara, (Inscribed), seated 7.2 × 3.9 cm.	Patharghata, Bhagalpur, Bihar
38.	4556/A14119	BMAG/AS/17/14 (R)	Seated Hariti, Bronze 4.8 × 3.3 cm.	Patharghata, Bhagalpur, Bihar
39.	4557/A20350	G11/24 (R)	Bronze Jambhala, seated 6.2 × 3.2 cm.	Patharghata, Bhagalpur, Bihar
40.	4558/A20349	G8/18 (R)	Bronze Ganesa, seated 5.3 × 3.3 cm.	Patharghata, Bhagalpur, Bihar
41.	6301/A8998	BMAG/RD/1 (R)	Bronze miniature stupa 22 × 13 cm.	Giridih, Bihar
42.	NS4248/A23456	G1/26 (R)	Brass Ashtabhuja Marichi, standing 13.1 × 9.3 cm.	Patna, Bihar
43.	BG 233/A20422	St Cp5/SF 3 (R)	Brass votive stupa 13.8 × 5.5 cm.	Bodhgaya, Bihar

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44.	BG 232	MC/V (R)	Copper (gilt) canopy with a small crystal sphere on its top (inscribed) Ht. 33 cm. ; 45.5 cm. in diam.	Bodhgaya, Bihar
45.	2597/A11645	St. Cp. 5/3 (R)	Stupa in relief 6.9 × 2.9 cm.	Sultanganj, Bihar
46.	Nil	G. 11/83 a.b. (R)	Bronze Hayagriva, gilt head detached 24.5 × 11.2 cm.	Unknown (Bihar)
47.	NS 2249/A24353	G4/1 (R)	Bronze Vishnu, Standing 93 × 43.1 cm.	Sahebganj, Rangpur Bangladesh
48.	NS 2250/A24354	G3/1 (D)	Bronze Vishnu, standing 86 × 38 cm.	Sahebganj, Rangpur Bangladesh
49.	NS 2251/A24358	G10/4 (R)	Bronze Vishnu, standing, Dasavatara on the background 31.7 × 13.6 cm.	Sahebganj, Rangpur Bangladesh
50.	NS 2253/A24355	G11/31 (R)	Couchant Elephant, Bronze 15 × 8.8 cm.	Sahebgangj, Rangpur, Bangladesh
51.	NS 2254/A24360	G11/86 (R)	Hind part of rampant lion, Bronze 16.1 × 13.7 cm.	Sahebganj, Rangpur, Bangladesh
52.	8141/A24334	G11/85 (D)	Bronze Buddha, seated (inscribed, gilded) 39 × 31.3 cm.	Jhewari, Chittagong Bangladesh
53.	8142/A24217	G11/84 (D)	Bronze Buddha, seated 36.5 × 31 cm.	Jhewari, Chittagong Bangladesh
54.	8143/A24314	G3/2 (R)	Bronze Buddha, seated 33.2 × 25 cm.	Jhewari, Chittagong Bangladesh
55.	8144/A24332	G11/64 (R)	Bronze Buddha, seated (inscribed) 28.5 × 23.5 cm.	Jhewari, Chittagong Bangladesh

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56.	8145/A24344	G11/65 (R)	Bronze Buddha, seated 27 × 22 cm.	Jhewari, Chittagong, Bangladesh
57.	8146/A24320	G11/38 (R)	Bronze Buddha, standing 30.2 × 9.9 cm.	Jhewari, Chittagong Bangladesh
58.	8147/A24333	G11/37 (R)	Bronze Buddha, standing 27.5 × 10.9 cm.	Jhewari, Chittagong Bangladesh
59.	8148/A24326	G11/67 (R)	Bronze Buddha, standing (three seals at the back) 29.3 × 12.3 cm.	Jhewari, Chittagong Bangladesh
60.	8149/A24336	G3/5 (R)	Bronze Buddha, seated 17 × 9.3 cm.	Jhewari, Chittagong Bangladesh
61.	8150/A24325	G11/40 (R)	Bronze Buddha, seated 16.8 × 12.6 cm.	Jhewari, Chittagong Bangladesh
62.	8151/A24343	G3/6 (R)	Bronze Buddha, seated 17.4 × 10 cm.	Jhewari, Chittagong Bangladesh
63.	8152/A24312	G3/4 (R)	Buddha associated with two Bodhisattvas, Bronze 16.5 × 12.3 cm.	Jhewari, Chittagong Bangladesh
64.	8153/A24335	G11/56 (R)	Bronze Buddha, seated (inscribed) 16.1 × 14 cm.	Jhewari, Chittagong Bangladesh
65.	8154/A24352	G11/49 (R)	Bronze Buddha, seated 10.9 × 7.9 cm.	Jhewari, Chittagong Bangladesh
66.	8155/A24323	G11/45 (R)	Bronze Buddha, seated 14 × 10.7 cm.	Jhewari, Chittagong Bangladesh
67.	8156/A24350	G11/57 (R)	Bronze Buddha, seated 15.4 × 8.7 cm.	Jhewari, Chittagong Bangladesh
68.	8157/A22481	G12/37 (R)	Bronze Buddha, seated (headless) 8.7 × 14 cm.	Jhewari, Chittagong Bangladesh

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
69.	8158/A24337	G11/47 (R)	Bronze Buddha, seated 12 × 7 cm.	Jhewari, Chittagong Bangladesh
70.	8159/A22979	G11/48 (R)	Bronze Buddha, seated 15.1 × 6.7 cm.	Jhewari, Chittagong Bangladesh
71.	8160/A20337	G11/130 (R)	Bronze Buddha, seated 11.8 × 7 cm.	Jhewari, Chittagong Bangladesh
72.	8161/A20338	G11/122 (R)	Bronze Buddha, seated 10.4 × 6.3 cm.	Jhewari, Chittagong Bangladesh
73.	8162/A24327	G11/72 (R)	Bronze Buddha, seated 6.5 × 5.4 cm.	Jhewari, Chittagong Bangladesh
74.	8163/A22982	G11/41 (R)	Bronze Buddha, seated 8.2 × 6.1 cm.	Jhewari, Chittagong Bangladesh
75.	8164/A24339	G11/70 (R)	Bronze Buddha, seated 9.8 × 5.5 cm.	Jhewari, Chittagong Bangladesh
76.	8165/A20336	G11/123 (R)	Bronze Buddha, seated 8.4 × 5.4 cm.	Jhewari, Chittagong Bangladesh
77.	8166/A22973	G11/71 (R)	Bronze Buddha, seated 7 × 4.6 cm.	Jhewari, Chittagong Bangladesh
78.	8167/A24338	G11/88 (R)	Bronze Buddha, seated 6 × 4.4 cm.	Jhewari, Chittagong Bangladesh
79.	8168/A20339	G11/125 (R)	Bronze Buddha, seated 6.4 × 4.7 cm.	Jhewari, Chittagong Bangladesh
80.	8169/A22974	G12/34 (R)	Bronze Buddha, seated 5.5 × 3.4 cm.	Jhewari, Chittagong Bangladesh
81.	8170/A20340	G11/124 (R)	Bronze Buddha, seated 5.9 × 4.1 cm.	Jhewari, Chittagong Bangladesh

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
82.	8171/A20344	G11/143 (R)	Bronze Buddha, seated 6.3 × 2.7 cm.	Jhewari, Chittagong Bangladesh
83.	8172	G11/50 (R)	Buddha's miracle at Sravasti, Bronze, 19 × 13.1 cm.	Jhewari, Chittagong Bangladesh
84.	8173/A24345	G3/7 (R)	A group of three Buddhas, seated, Bronze 18.3 × 6.6 cm.	Jhewari, Chittagong Bangladesh
85.	8174/A24330	G11/51 (R)	Bronze Buddha, seated 12.6 × 7.9 cm.	Jhewari, Chittagong Bangladesh
86.	8175/A24329	G11/74 (R)	Bronze Buddha, seated 6 × 4.3 cm.	Jhewari, Chittagong Bangladesh
87.	8176/A24341	G11/73 (R)	Bronze Buddha, seated 5.5 × 4.2 cm.	Jhewari, Chittagong Bangladesh
88.	8177/A24340	G3/15 (R)	Buddha in Mahaparinirvana, Bronze 1.7 × 7 cm.	Jhewari, Chittagong Bangladesh
89.	8178/A24318	G11/53 (R)	Bronze Vajrasattva (Ratnasambhava), seated 11.9 × 6.4 cm.	Jhewari, Chittagong Bangladesh
90.	8179/A24347	G3/10 (R)	Bronze Vasudhara, seated 11.6 × 8 cm.	Jhewari, Chittagong Bangladesh
91.	8180/A24348	G11/52 (R)	Bronze Vasudhara, seated 11.3 × 5.4 cm.	Jhewari, Chittagong Bangladesh
92.	8181/A24316	G11/62 (R)	Bronze Bodhisattva, four-armed, seated 7.2 × 4.8 cm.	Jhewari, Chittagong Bangladesh
93.	8182/A24349	G11/77 (R)	Four-armed female deity, (Chunda), Bronze 7.6 × 5.6 cm.	Jhewari, Chittagong Bangladesh
94.	8183/A24313	G3/9 (R)	Bronze Lokesvara, seated 10.4 × 8.5 cm.	Jhewari, Chittagong Bangladesh

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95.	8184/A24322	G11/39 (R)	Bronze Avalokitesvara, standing 28.9 × 10 cm.	Jhewari, Chittagong Bangladesh
96.	8185/A24346	G11/79 (R)	Bronze Avalokitesvara, seated 8.8 × 5.5 cm.	Jhewari, Chittagong Bangladesh
97.	8186/A24319	G11/78 (R)	Bronze Avalokitesvara, seated 9.8 × 5 cm.	Jhewari, Chittagong Bangladesh
98.	8187/A24321	G3/12 (R)	Bronze Avalokitesvara, seated 9.7 × 4.8 cm.	Jhewari Chittagong Bangladesh
99.	8188/A24315	G3/8 (R)	Bronze Buddha, standing 16.5 × 8.2 cm.	Jhewari, Chittagong Bangladesh
100.	8189/A24331	G11/60 (R)	Bronze Buddha, standing 19.6 × 6.6 cm.	Jhewari Chittagong Bangladesh
101.	8190/A24340	G11/59 (R)	Bronze Buddha, standing 14.1 × 6.6 cm.	Jhewari, Chittagong Bangladesh
102.	8191/A24324	G11/58 (R)	Bronze Buddha, damaged standing 13 × 6.6 cm.	Jhewari Chittagong Bangladesh
103.	8192/A24328	G11/76 (R)	Bronze Buddha standing in dharmachakramudra, 6.8 × 2.4 cm.	Jhewari, Chittagong Bangladesh
104.	8193/A20345	G11/147 (R)	Bronze Buddha, standing in abhaya, 7.2 × 2.5 cm.	Jhewari, Chittagong Bangladesh
105.	8194/A24351	G11/42 (R)	Bronze Buddha, standing in abhaya, 9.9 × 4.5 cm.	Jhewari, Chittagong Bangladesh
106.	8195/A22977	G11/31 (R)	Part of background of an image, Bronze 26.4 × 8.5 cm.	Jhewari, Chittagong Bangladesh
107.	8196/A22983	G11/82 (R)	Part of ornament of an image, Bronze 10.3 × 6.6 cm.	Jhewari, Chittagong Bangladesh

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
108.	8197/A22980	G11/43 (D)	Miniature stupa, Bronze 12.5 × 5.8 cm.	Jhewari, Chittagong Bangladesh
109.	8198/A22978	G11/36 (R)	Model of a temple, Bronze 37.9 × 20.7 cm.	Jehwari, Chittagong Bangladesh
110.	8199/A20346	St.cp. 5 (R)	Halo with part of the back rest of an image with a seal, Bronze 14.5 × 13.5 cm.	Jehwari, Chittagong Bangladesh
111.	8597/A22975	G12/38 (R)	Seated Vaishnavi, Bronze 4.3 × 2.5 cm.	Mahasthan, Bogra Bangladesh
112.	8598/A24363	G3/11 (R)	Standing Lokesvara, Bronze 6.5 × 3.8 cm.	Mahasthan, Bogra Bangladesh
113.	8980/A24361	G11/26 (D)	Elephant with riders, Bronze 8.7 × 6.1 cm.	Mahasthan, Bogra Bangladesh
114.	8981/A24362	G11/89 (R)	Bronze Avalokitesvara, seated 5.1 × 4.2 cm.	Mahasthan, Bogra Bangladesh
115.	12907/A24303	G3/13 (D)	Seated Siva-Durga, Bronze 14.5 × 5.7 cm.	Paharpur, Rajshahi Bangladesh
116.	12908/A24359	G3/14 (R)	Seated Ganesa, Bronze 9.2 × 5 cm.	Paharpur, Rajshahi Bangladesh
117.	12909/A24304	G3/17 (R)	Bronze Jina, standing 7.6 × 3 cm.	Paharpur, Rajshahi Bangladesh
118.	12910/A24298	G11/75 (R)	Bronze Buddha, standing 8.1 × 3 cm.	Paharpur, Rajshahi Bangladesh
119.	12911/A20347	G11/146 (R)	Bronze umbrella of a votive stupa 7.2 × 5.9 cm.	Paharpur, Rajshahi Bangladesh

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
120.	12912/A20348	G11/145 (R)	Bronze Bell 3.6 × 2.8 cm.	Paharpur, Rajshahi Bangladesh
121.	A24808	St. Cp. 7/1 (R)	Bronze Buddha, seated 5.7 × 4.2 cm.	Mainamati, Comilla Bangladesh
122.	A24809	St. Cp. 7/2 (R)	Bronze Buddha, seated 5.4 × 4.1 cm.	Mainamati, Comilla Bangladesh
123.	A24810	St. Cp. 7/3 (R)	Bronze Buddha, seated 5.8 × 4.7 cm.	Mainamati, Comilla Bangladesh
124.	A24811	St. Cp. 7/4 (R)	Bronze Buddha, seated 6.1 × 4.5 cm.	Mainamati, Comilla Bangladesh
125.	A24812	St. Cp. 7/5 (R)	Bronze Buddha, seated 5.3 × 4.3 cm.	Mainamati, Comilla Bangladesh
126.	A24813	St. Cp. 7/6 (R)	Bronze Buddha, seated 5.2 × 4.3 cm.	Moinamati, Comilla Bangladesh
127.	A24814	St. Cp. 7/7 (R)	Bronze Buddha, seated 5.4 × 1 cm.	Moinamati, Comilla Bangladesh
128.	Nil	St. Cp. 7/SF3 (R)	Bronze Buddha, seated 7.1 × 5.2 cm.	Unknown (Paharpur, Rajshahi, Bangladesh)
129.	9212/A24357	G3/3 (R)	Brass Manasa, seated 42.4 × 31 cm.	North Bengal
130.	13149/A7190	BMAG/RD/2207/3 (R)	Brass Gauri 4.5 × 4.2 cm.	Kasba, Raiganj, Dinajpur, Bengal
131.	NS 23/A20722	G11/28 (R)	Namasangiti Manjusri 15.5 × 9 cm.	Darjeeling, Bengal
132.	NS 24/A20716	G11/27 (R)	Brass Buddha, seated 13 × 8.4 cm.	Darjeeling, Bengal
133.	NS 25/A20710	G11/139 (R)	Brass Buddha, seated 13.4 × 8.2 cm.	Darjeeling, Bengal

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
134.	NS 26/A20709	G11/19 (R)	Copper Ardhanarisvara, standing 8.3 × 6.4 cm.	Darjeeling, Bengal
135.	NS 27/A20719	G10/7 (R)	Brass Bodhisattva with Sakti 21.2 × 13.4 cm.	Darjeeling, Bengal
136.	NS 28/A20723 a,b,c	G12/21 (R)	Brass Padmasambhava, seated inside a case 4.7 × 3.2 cm. & 10.5 × 8.4 cm.	Darjeeling, Bengal
137.	NS 29/A20708	G11/129 (R)	Brass Avalokitesvara, seated 14 × 9.7 cm.	Darjeeling, Bengal
138.	NS 30/A20713	G11/17 (R)	Brass (gilt) Bodhisattva, seated 9.2 × 5.4 cm.	Darjeeling, Bengal
139.	NS 31/A20699	G11/16 (R)	Brass Parsvanatha, seated 6.7 × 3.4 cm.	Darjeeling, Bengal
140.	NS 32/A20700	G11/126 (R)	Brass Tara, seated 5.8 × 3.6 cm.	Darjeeling, Bengal
141.	NS 34/A20714	G11/136 (R)	Brass two-armed standing figure 12 × 11.5 cm.	Darjeeling, Bengal
142.	NS 35/A20720	G11/131 (R)	Brass Avalokitesvara, seated 15 × 8.5 cm.	Darjeeling, Bengal
143.	NS 36/A20718	G11/29 (R)	Brass dancing male 15.4 × 12.2 cm.	Darjeeling, Bengal
144.	NS 37/A20715	G11/128 (R)	Brass seated figure 12 × 8.7 cm.	Darjeeling, Bengal
145.	NS 38/A20703	G11/140 (R)	Brass standing figure 31.5 × 20 cm.	Darjeeling, Bengal
146.	NS 74/A20701	G11/134 (R)	Lokanatha, Bronze 48.7 × 33 cm.	Darjeeling, Bengal
147.	NS 75/A20690	G12/8 (R)	Visvarupa, Brass 65 × 44 cm.	Darjeeling, Bengal
148.	68/40	St. Cp. 20/2 (R)	Bronze Somaskanda 11 × 14 cm.	Bengal
149.	73/7	St. Cp. 20/2 (R)	Bronze Vishnu (inscribed at the back) 9.8 × 6.7 cm.	Bengal

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
150.	80/1	CID/1 (R)	Bronze Manasa 8.5 × 4.5 cm.	Unknown (Bengal)
151.	81/6	CID/2 (R)	Bronze Durga, standing 13.2 × 7.7 cm.	Unkown (Bengal)
152.	81/7	CID/1 (R)	Bronze Sita or Lakshmi 13.7 × 6.1 cm.	Unknown (Bengal)
153.	81/8	CID/4 (R)	Bronze female deity, seated 12.4 × 7 cm.	Unknown (Bengal)
154.	83/1	CIE/7 (R)	Bronze standing Lokesvara 8.6 × 3.3 cm.	Unknown (Bengal)
155.	83/2	CIE/8 (R)	Brass Buddha, seated 5.7 × 3.3 cm.	Unknown (Bengal)
156.	90/248	RD/St. Cp. (R)	Gopala, Bronze 11 × 3.9 cm.	Unknown (Bengal)
157.	90/249	RD/St. Cp. (R)	Bronze seated female figure 3.7 × 2.3 cm.	Unknown (Bengal)
158.	A23555	G12/29 (R)	Bala-Gopala, Brass 31.5 × 30 cm.	Unknown (Bengal)
159.	Nil	G12/33 (R)	Chakra, Bronze 12.7 × 9.2 cm.	Unknown (Bengal)
160.	6681/A24372	G3/16 (R)	Bronze Buddha head 18.5 × 10.9 cm.	Chauduar, Cuttack, Orissa
161.	9243/A24370	G3/18 (R)	Bronze Rishabhanatha, standing 32 × 12.8 cm.	Kakatpur, Puri, Orissa
162.	9244/A24369	G10/8 (R)	Bronze standing Jina with six human figures 13 × 4.5 cm.	Kakatpur, Puri, Orissa
163.	9245/A24367	G11/81 (R)	Bronze standing Jina 9 × 3.3 cm.	Kakatpur, Puri, Orissa
164.	9246/A24371	G11/55 (R)	Bronze Adinatha 12.2 × 11 cm.	Bhubaneswar, Orissa
165.	95/1	RD/St. Cp. (R)	Brass Varahavatara 90.5 × 48 cm.	Orissa
166.	95/2	RD/St. Cp. (R)	Brass Dancing Ganesa 114.5 × 82.5 cm.	Orissa

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
167.	95/3 a, b, c, d	RD/St. Cp. (R)	Four brass cot legs a - 82 × 23.5 cm. b - 81 × 23 cm. c - 81 × 23 cm. d - 81 × 23 cm.	Orissa
168.	NS 4370/A11681	G11/137 (R)	Siva-Parvati, Brass 15 × 7.5 cm.	Unknown (North Eastern India)
169.	NS 4378/A11674	G11/142 (R)	Male figure holding elephant goad, Brass 8.6 × 5.2 cm.	Unknown (North Eastern India)
170.	NS 4381/A11678	St. Cp. 5/3 (R)	Five-hooded cobra, Brass 5 × 2.7 cm.	Unknown (North Eastern India)
171.	NS 4384/A11675	St. Cp. 5/3 (R)	Brass Bull 3.9 × 3.2 cm.	Unknown (North Eastern India)
172.	NS 4373	St. Cp. 7/SF3 (R)	Pair of Bulls with two dogs on pedestal, Bronze 5.4 × 8.4 cm.	Unknown (North-Eastern India)
173.	NS 4375/A14112	BMAG/AS/17/14 (R)	Couple with a child 3 cm. long	Unknown (South India)
174.	NS 4382/A14109	BMAG/AS/17/14 (R)	Siva, brass 4.7 cm. in height	Unknown (South India)
175.	86/2	M.C/NALM/SF1 (R)	Bronze Tara 7.5 × 4.5 cm.	Unknown (Eastern India)
176.	87/7	CIE/1 (R)	Copper couchant deer 8.1 × 6 cm.	Unknown (Eastern India)
177.	9406/A22888	G12/35 (R)	Bronze Vajrasana Buddha 8.2 × 6.5 cm.	Mathura, Uttar Pradesh
178.	NS 4262/A20341	G 11/25 (R)	Lakshmi-Narayana, Brass 10.8 × 7.3 cm.	Mathura, Uttar Pradesh
179.	NS 4377/A11680	G10/10 (R)	Copper Ganesa 5.5 × 4.2 cm.	Mathura, Uttar Pradesh
180.	87/9	CIE/21 (R)	Elephant rider, Bronze 3.9 × 3.3 cm.	Kosam, Uttar Pradesh

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181.	87/12	CIE/6 (R)	Dance/Cult figure, Bronze 2.9 × 18 cm.	Kosam, Uttar Pradesh
182.	87/13	CIE/7 (R)	Miniature Bird, Bronze 2 × 0.9 cm.	Kosam, Uttar Pradesh
183.	87/14	CIE/8 (R)	Miniature Bird, Bronze 3.9 × 3.4 cm.	Kosam, Uttar Pradesh
184.	87/15	CIE/9 (R)	Miniature Bird, Bronze 2.3 × 1.2 cm.	Kosam, Uttar Pradesh
185.	87/16	CIE/10 (R)	Miniature Bird, Bronze 1.6 × 2.9 cm.	Kosam Uttar Pradesh
186.	73/6	CIC/17 (R)	Bronze Ganesa, seated 15 × 9.5 cm.	Unknown (Kosam, Uttar Pradesh)
187.	NS 1397/A10294	St. Cp. 4/1/43 (R)	Copper female figure 11.4 × 2.6 cm.	Bhita, Uttar Pradesh
188.	90/99	RD/St. Cp. (R)	Matrikas seated in a row, Brass 8.2 × 18.8 cm.	Uttar Pradesh
189.	90/100	RD/St.Cp. (R)	Krishna with Gopinis, Brass 8.7 × 8 cm.	Uttar Pradesh
190.	90/101	RD/St.Cp. (R)	Brass Lakshmi-Narayana 9.6 × 4.2 cm.	Uttar Pradesh
191.	90/102	RD/St.Cp. (R)	Brass female figure 12.3 × 5 cm.	Uttar Pradesh
192.	90/103	RD/St.Cp. (R)	Bronze sculptural fragment : seated figure inside a petal 8 × 3.2 cm.	Uttar Pradesh
193.	90/224	RD/St.Cp. (R)	Bronze Garuda 12.2 × 11.5 cm.	Uttar Pradesh
194.	90/225	RD/St.Cp. (R)	Bronze Ganesa 5.5 × 4.2 cm.	Uttar Pradesh
195.	90/226	RD/St.Cp. (R)	Bronze Uma-Mahesvara 8 × 5 cm.	Uttar Pradesh
196.	90/227	RD/St.Cp. (R)	Bronze seated female figure 9.2 × 5.5 cm.	Uttar Pradesh

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197.	90/83	RD/St.Cp. (R)	Miniature Temple, Bronze 15.4 × 11.9 cm.	Unknown (Uttar Pradesh)
198.	90/85	RD/St. Cp. (R)	Bronze female figure standing 7.8 × 3.1 cm.	Unknown (Uttar Pradesh)
199.	90/89	RD/St. Cp. (R)	Bronze two-armed female figure 6.1 × 2.9 cm.	Unknown (Uttar Pradesh)
200.	90/134	RD/St. Cp. (R)	Bronze seated male figure 8.2 × 4.5 cm.	Unknown (Uttar Pradesh)
201.	90/231	RD/ST. Cp. (R)	Brass Vishnu 10.7 × 6.9 cm.	Unknown (Uttar Pradesh)
202.	90/247	RD/St. Cp. (R)	Bronze Ganesa 6.2 × 4.3 cm.	Unknown (Uttar Pradesh)
203.	90/250	RD/St. Cp. (R)	Bronze standing male deity 5.1 × 3.2 cm.	Unknown (Uttar Pradesh)
204.	Nil	St. Cp. 7/SF3 (R)	Two armed standing goddess, Brass 8.1 × 5.2 cm.	Unknown (Uttar Pradesh)
205.	Gr. 1/A22985	G11/87 (R)	Quadrangular tower with twenty-four Jinas around, Bronze 43 × 16 cm.	Gwalior, Madhya Pradesh
206.	Gr. 2/A9967	G11/32 (R)	Tirthankara, Bronze 19.5 × 13 cm.	Gwalior, Madhya Pradesh
207.	Gr. 3/A24368	G11/54 (R)	Bronze Jina, seated 14.5 × 8.7 cm.	Gwalior, Madhya Pradesh
208.	Gr. 4/A20343	G11/135 (R)	Bronze Buddha or Jina, seated 12.2 × 8.2 cm.	Gwalior, Madhya Pradesh
209.	Gr. 5/A20342	St. Cp. 5/3 (R)	Bronze Tirthankara seated 16.7 × 12 cm.	Gwalior, Madhya Pradesh
210.	13653/A8306	GNG/20 (R)	Bronze Vishnu with Sridevi and Bhudevi 7.6 × 5.4 cm.	Baroda, Gujarat
211.	13654/A8401	GNG/20 (R)	Bronze Ambika 16.9 × 8.2 cm.	Baroda, Gujarat

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212.	13655/A8400	GNG/20 (R)	Bronze Narasimha 9.5 × 7.5 cm.	Baroda, Gujarat
213.	13656/A8399	GNG/20 (R)	Bronze Benugopala 9 × 3.9 cm.	Baroda, Gujarat
214.	9293/A17947	BMAG/AS/15/6 (R)	Brass trefoil object with lion face design in the centre 3.5 × 3.5 cm.	Ahar, Rajasthan
215.	NS 40/A9966	G10/9 (D)	Brass Ganesa 6.1 × 4.6 cm.	Chennai, Tamil Nadu
216.	NS 41/A9953	G8/14 (R)	Brass Vishnu 16.1 × 6.5 cm.	Chennai Tamil Nadu
217.	NS 42/A9947	G8/7 (D)	Brass four-armed male deity (Vishnu) 63.5 × 23.9 cm.	Chennai, Tamil Nadu
218.	NS 46/A9970	G8/5 (D)	Brass standing female deity (Dipa Lakshmi) 18.5 × 11.8 cm.	Chennai, Tamil Nadu
219.	NS 47/A9969	G11/34 (R)	Single bell with a bull, Bell metal 21.2 × 10 cm.	Chennai, Tamil Nadu
220.	NS 48/A9968	G12/15 (R)	Double bell with a bull, Bell metal 16.2 × 20.5 cm.	Chennai, Tamil Nadu
221.	NS 49/A9963	G11/15 (R)	Winged figure, Brass 11.6 × 8.4 cm.	Chennai, Tamil Nadu
222.	NS 50/A9984	G12/16 (R)	Brass figure of Mahavira, Hanumana and two other Human figures 17 × 13.9 cm.	Chennai, Tamil Nadu
223.	NS 51/A9934	G6/12 (D)	Brass (gilt) Buddha, seated 14 × 7.2 cm.	Chennai, Tamil Nadu
224.	NS 52/A9957	G8/12 (R)	Standing female figure Copper 14 × 4 cm.	Chennai, Tamil Nadu
225.	NS 53/A9990	G12/11 (R)	Standing female figure (Bhudevi) Copper 39 × 15 cm.	Chennai, Tamil Nadu

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226.	NS 54/A9987	G8/10 (D)	Siva & Parvati Copper 35 × 32.6 cm.	Chennai, Tamil Nadu
227.	11000/A9983	G5/3 (D)	Nataraja, Bronze 102 × 81 cm.	Chennai Tamil Nadu
228.	11001/A9981	G11/90 (D)	Somaskanda Bronze 56.5 × 75 cm.	Chennai, Tamil Nadu
229.	11002/A9926	G7/1 (R)	Votive Stupa, Bronze 23 × 10.1 cm.	Chennai, Tamil Nadu
230.	11004/A7425	BMAG/RD/1 (R)	Vishnu, Bronze 42 × 155 cm.	Chennai, Tamil Nadu
231.	11005/7426	G12/20 (R)	Bhudevi, Bronze 33.3 × 12.6 cm.	Chennai, Tamil Nadu
232.	1106/A7427	G12/19 (R)	Standing Sridevi, Bronze 33.9 × 14.2 cm.	Chennai, Tamil Nadu
233.	NS 44/A9978	G8/20 (D)	Brass female figure, seated 20 × 15.4 cm.	Thanjavur, Tamil Nadu
234.	NS 45/A9961	G8/15 (D)	Brass dwarfish male (Krishnaswami) 15.4 × 10 cm.	Thanjavur, Tamil Nadu
235.	NS 3712/A9972	G2/15 (R)	Bronze Vishnu 78.5 × 31.1 cm.	Thanjavur, Tamil Nadu
236.	NS 3713/A9941	G9/30 (R)	Bronze Vishnu 49 × 20 cm.	Thanjavur, Tamil Nadu
237.	NS 3714/A9975	G10/1a (R)	Bronze Bhudevi 62.5 × 22 cm.	Thanjavur, Tamil Nadu
238.	NS 3715/A9991	G10/10 (R)	Bronze Bhudevi, standing 41.8 × 17.6 cm.	Thanjavur, Tamil Nadu
239.	NS 3716/A9973	G10/1c (R)	Sridevi, Bronze 63 × 22 cm.	Thanjavur, Tamil Nadu
240.	NS 3717/A9989	G10/9 (R)	Standing Sridevi, Bronze 41.5 × 17 cm.	Thanjavur, Tamil Nadu
241.	NS 3786/A9971	G8/9 (D)	Siva and Parvati Bronze 35 × 21.4 cm.	Thanjavur, Tamil Nadu

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242.	NS 3789/A9977	G8/21 (D)	Parvati, Bronze 72 × 23 cm.	Thanjavur, Tamil Nadu
243.	NS 3791/A9948	BMAG/RD/1 (R)	Parvati, Bronze 79 × 25.2 cm.	Thanjavur, Tamil Nadu
244.	7585/A16242	BMAG/RD/1 (R)	Bronze Manikavasankara 64 × 25 cm.	Thanjavur, Tamil Nadu
245.	7584/A16243	BMAG/RD/1 (R)	Balasubrahmanya, Bronze 47 × 15 cm.	Thanjavur, Tamil Nadu
246.	9118/A9976	G12/28 (R)	Bhudevi, Bronze 64 × 23.1 cm.	Thanjavur, Tamil Nadu
247.	9119/A9974	G12/27 (R)	Sridevi, Bronze 63.5 × 23.1 cm.	Thanjavur, Tamil Nadu
248.	11813/A7428	G11/33 (D)	Aiyanar on elephant, Bronze 20.1 × 16.4 cm.	Thanjavur, Tamil Nadu
249.	13344/A8996	BMAG/RD/1 (R)	Balasubrahmanya Bronze and Copper 53.5 × 20.5 cm.	Thanjavur, Tamil Nadu
250.	13345/A9753	AS/58/2 (R)	Bell wth loose handle, Copper 21.5 cm.	Thanjavur, Tamil Nadu
251.	13346/A9754	AS/58/2 (R)	Copper bell 12 cm. long	Thanjavur, Tamil Nadu
252.	13215-16/A13245 & A13246	MAG/RD/1 (R)	Umashita, Bronze Siva - 41 × 37 cm. Uma - 36 × 26 cm.	Thanjavur Tamil Nadu
253.	NS 3788 ?	St. Cp. 7/SF3 (R)	Bronze, ornamented trisula (?) with an image of four-armed standing Siva. 49.8 × 28.8 cm.	Sikkil, Tamil Nadu
254.	13212-14/A9942-44	G12/13 (R)	Vishnu with Sridevi and Bhudevi, Bronze Vishnu - 66.5 × 24.4 cm. Sridevi - 55.5 × 20.8 cm. Bhudevi - 55 × 20.2 cm.	Tiruppuvanam, Thanjavur Tamil Nadu
255.	11485/A9985	G8/8 (D)	Four-armed Kali, Bronze 33.5 × 26 cm.	Tiruchirapalli, Tamil Nadu

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256.	13146/A7189	MAG/RD/2207/3 (R)	Bronze Manjusri, seated 5.8 × 3 cm.	Kanchipuram, Tamil Nadu
257.	NS 3785/A9952	G10/3 (R)	Somaskanda, Bronze 61 × 73 cm.	Belur, Salem, Tamil Nadu
258.	NS 3787/A9946	G9/2 (R)	Vishnu, Bronze 58 × 25.2 cm.	North Arcot, Tamil Nadu
259.	NS 3790/A9951	G12/17 (R)	Standing Siva, Bronze 48.6 × 30.9 cm.	Noth Arcot, Tamil Nadu
260.	9482/A9988	G8/11 (D)	Standing Ganesa, Brass 41 × 21 cm.	South Arcot, Tamil Nadu
261.	10995/A9959	G8/1 (D)	Bronze, Vishnu 19.7 × 6.8 cm.	Sonallur, Chingleput Tamil Nadu
262.	10996/A9960	G8/3 (D)	Bhudevi, Bronze 15 × 5.7 cm.	Sonallur, Chingleput Tamil Nadu
263.	10997/A9958	G8/2 (D)	Sridevi, Bronze 14.9 × 5.7 cm.	Sonallur, Chingleput Tamil Nadu
264.	6882/A9962	G8/6 (D)	Bronze male deity holding lotus 15 × 4.8 cm.	Nagapattinam, Tamil Nadu
265.	6883/A9964	G11/107 (R)	Subrahmanyam, Bronze 11.7 × 4 cm.	Nagapattinam, Tamil Nadu
266.	6885/A9893	G6/1(D)	Bronze Buddha, standing 28.7 × 9.3 cm.	Nagapattinam, Tamil Nadu
267.	6886/A9911	G11/113 (R)	Bronze Buddha, standing 26.5 × 8.2 cm.	Nagapattinam, Tamil Nadu
268.	6887/A9914	G11/110 (R)	Bronze Buddha, standing 26 × 8.4 cm.	Nagapattinam, Tamil Nadu
269.	6888/A9909	G11/109 (R)	Bronze Buddha, standing 22.8 × 7.4 cm.	Nagapattinam, Tamil Nadu
270.	6889/A9910	G11/99 (R)	Bronze Buddha, standing 22.6 × 8.1 cm.	Nagapattinam, Tamil Nadu
271.	6890/A9892	G11/112 (R)	Bronze Buddha, standing 21 × 7.2 cm.	Nagapattinam, Tamil Nadu

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272.	6891/A9906	G11/11 (R)	Bronze Buddha, standing 18.4 × 5.5 cm.	Nagapattinam, Tamil Nadu
273.	6892/A9907	G11/10 (R)	Bronze Buddha, standing 19 × 6.2 cm.	Nagapattinam, Tamil Nadu
274.	6893/A22821	G6/3 (D)	Bronze Buddha, standing 17.9 × 5 cm.	Nagapattinam, Tamil Nadu
275.	6894/A22820	G11/102 (R)	Bronze Buddha, standing 18.2 × 5.3 cm.	Nagapattinam, Tamil Nadu
276.	6895/A9918	G6/2 (D)	Bronze Buddha, standing 17 × 5.8 cm.	Nagapattinam, Tamil Nadu
277.	6896/A9889	G11/12 (R)	Bronze Buddha, standing 17.1 × 4.9 cm.	Nagapattinam, Tamil Nadu
278.	6897/A9896	G6/4 (D)	Bronze Buddha, standing 16.9 × 5.4 cm.	Nagapattinam, Tamil Nadu
279.	6898/A9919	G6/5 (D)	Bronze Buddha, standing 15.8 × 4.9 cm.	Nagapattinam, Tamil Nadu
280.	6899/A9905	G11/13 (R)	Bronze Buddha, standing 14.8 × 4.6 cm.	Nagapattinam, Tamil Nadu
281.	6900/A9888	G11/103 (R)	Bronze Buddha, standing 14.3 × 4.2 cm.	Nagapattinam, Tamil Nadu
282.	6901/A9904	G6/6 (R)	Bronze Buddha, standing 14 × 4.5 cm.	Nagapattinam, Tamil Nadu
283.	6902/A9884	G6/7 (D)	Bronze Buddha, standing 12.9 × 4.4 cm.	Nagapattinam, Tamil Nadu
284.	6903/A9887	G11/96 (R)	Bronze Buddha, standing 11.9 × 4.5 cm.	Nagapattinam, Tamil Nadu
285.	6904/A9902	G11/106 (R)	Bronze Buddha, standing 10.9 × 3.9 cm.	Nagapattinam, Tamil Nadu
286.	6905/A9885	G11/101 (R)	Bronze Buddha, standing 10.1 × 3.4 cm.	Nagapattinam, Tamil Nadu
287.	6906/A9903	G11/14 (R)	Bronze Buddha, standing 9.2 × 2.8 cm.	Nagapattinam, Tamil Nadu
288.	6907/A9891	G11/94 (R)	Bronze Buddha, standing 20.5 × 8.6 cm.	Nagapattinam, Tamil Nadu
289.	6908/A9894	G7/3 (R)	Bronze Buddha, standing 22 × 9.1 cm.	Nagapattinam, Tamil Nadu

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290.	6909/A9913	G11/9 (R)	Bronze Buddha, standing 28 × 11.4 cm.	Nagapattinam, Tamil Nadu
291.	6910/A9915	G11/95 (R)	Bronze Buddha, standing 22 × 8.6 cm.	Nagapattinam, Tamil Nadu
292.	6911/A9916	G7/2 (R)	Bronze Buddha, standing 24.1 × 7.5 cm.	Nagapattinam, Tamil Nadu
293.	6912/A9895	G11/97 (R)	Bronze Buddha, standing 21.1 × 6.6 cm.	Nagapattinam, Tamil Nadu
294.	6913/A9908	G11/111 (R)	Bronze Buddha, standing 23.1 × 11.9 cm.	Nagapattinam, Tamil Nadu
295.	6914/A9897	G11/108 (R)	Bronze Buddha, standing 17.5 × 6.5 cm.	Nagapattinam, Tamil Nadu
296.	6915/A9890	G7/4 (R)	Bronze Buddha, standing (inscribed). 17.1 × 7.5 cm.	Nagapattinam, Tamil Nadu
297.	6916/A9817	G7/5 (R)	Bronze Buddha, standing (inscribed) 17.6 × 7.2 cm.	Nagapattinam, Tamil Nadu
298.	6917/A9898	G11/106 (R)	Bronze Buddha, standing 15.6 × 6 cm.	Nagapattinam, Tamil Nadu
299.	6918/A9886	G11/100 (R)	Bronze Buddha, standing 11.8 × 5.5 cm.	Nagapattinam, Tamil Nadu
300.	6919/A9900	G11/98 (R)	Bronze Buddha, standing 11.5 × 4.2 cm.	Nagapattinam, Tamil Nadu
301.	6920/A9901	G11/104 (R)	Bronze Buddha, standing 11.5 × 4.7 cm.	Nagapattinam, Tamil Nadu
302.	6921/A9925	G6/9 (D)	Bronze Buddha, seated 16.9 × 12.8 cm.	Nagapattinam, Tamil Nadu
303.	6922/A9940	G6/10 (D)	Bronze Buddha, seated 14 × 9.2 cm.	Nagapattinam, Tamil Nadu
304.	6923/A9928	G6/11 (D)	Bronze Buddha, seated 14.5 × 10.5 cm.	Nagapattinam, Tamil Nadu
305.	6924/A9930	G11/8 (R)	Bronze Buddha, seated 9.1 × 6.4 cm.	Nagapattinam, Tamil Nadu
306.	6925/A9920	G11/120 (R)	Bronze Buddha, seated 8.5 × 6.1 cm.	Nagapattinam, Tamil Nadu

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307.	6926/A9936	G11/7 (R)	Bronze Buddha, seated 16.3 × 11.8 cm.	Nagapattinam, Tamil Nadu
308.	6927/A9937	G11/121 (R)	Bronze Buddha, seated 14.6 × 10.7 cm.	Nagapattinam, Tamil Nadu
309.	6928/A9929	G11/5 (R)	Bronze Buddha, seated 11.3 × 9 cm.	Nagapattinam, Tamil Nadu
310.	6929/A9935	G11/118 (R)	Bronze Buddha, seated 12.6 × 9.3 cm.	Nagapattinam, Tamil Nadu
311.	6930/A9927	G6/13 (R)	Bronze Buddha, seated 17.1 × 13.5 cm.	Nagapattinam, Tamil Nadu
312.	6931/A9933	G11/6 (R)	Bronze Buddha, seated (Inscribed) 13.5 × 9 cm.	Nagapattinam, Tamil Nadu
313.	6932/A9938	G10/5 (R)	Bronze Buddha, seated 15.3 × 10.7 cm.	Nagapattinam, Tamil Nadu
314.	6933/A9937	G11/116 (R)	Bronze Buddha, seated 14.6 × 11 cm.	Nagapattinam, Tamil Nadu
315.	6934/A9924	G11/115 (R)	Bronze Buddha, seated 13.1 × 9.3 cm.	Nagapattinam, Tamil Nadu
316.	6935/A9932	G11/2 (R)	Bronze Buddha, seated 9.7 × 7 cm.	Nagapattinam, Tamil Nadu
317.	6936/A9921	G11/117 (R)	Bronze Buddha, seated 10.1 × 7.3 cm.	Nagapattinam, Tamil Nadu
318.	6937/A9931	G11/119 (R)	Bronze Buddha, seated 6.8 × 4.7 cm.	Nagapattinam, Tamil Nadu
319.	6938/A21511	G11/20 (R)	Bronze Buddha, seated 6.6 × 5.2 cm.	Nagapattinam, Tamil Nadu
320.	6939/A9923	G11/4 (R)	Bronze Buddha, seated 10.3 × 7.1 cm.	Nagapattinam, Tamil Nadu
321.	6940/A9922	G11/3 (R)	Bronze Buddha, seated (stone on corwn) 10.4 × 8.3 cm.	Nagapattinam, Tamil Nadu
322.	6940A/A9899	G6/8 (R)	Bronze Buddha, standing 13 × 6.2 cm.	Nagapattinam, Tamil Nadu
323.	13209-11/A9950	G5/5 (R)	Somaskanda, Bronze Siva - 72 × 46 cm. Parvati - 54.5 × 41.6 cm. Skanda - 19.7 × 9 cm.	Tarankudi, Ramnad, Tamil Nadu

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
324.	65/29	CIE/4 (R)	Uma-Mahesvara with Ganesa and Karttikeya, Bronze 7.5 × 8.7 cm.	Kerala
325.	66/30	CIC/6 (R)	Bronze Durga, standing 18.4 × 11.5 cm.	South India
326.	87/9	CIE/3 (R)	Siva, Bronze 5.7 × 2.7 cm.	South India
327.	87/10	CIE/4 (R)	Devi in sukhasana, Bronze 4.3 × 3.5 cm.	South India
328.	87/11	CIE/5 (R)	Karttikeya, Bronze 4.3 × 3.5 cm.	South India
329.	87/18	CIE/12 (R)	Lakshmi Narayana, Bronze 7.5 × 5.7 cm.	South India
330.	87/25	CIE/13 (D)	Deepa Lakshmi, standing Bronze 42.1 × 19.4 cm.	South India
331.	92/2	92/DD/1 (R)	Nataraja, Bronze 97 × 60 cm.	South India
332.	669AG	TFAT/14 (R)	Karttikeya, Bronze 32 × 22 cm.	South India
333.	13499/S18	TFAT/6 (D)	Bhadrakali, Bronze 20 × 7.5 cm.	South India
334.	14200/S105	TFAT/15 (D)	Sukhasana Somaskanda Bronze 62.5 × 37 cm.	South India
335.	13251/S151	TFAT/8 (D)	Paramesvari, Bronze 12.4 × 6.3 cm.	South India
336.	13501/S20	TFAT/4 (D)	Paramesvari, Bronze 13.1 × 4.5 cm.	South India
337.	13508/S27	TFAT/5 (D)	Garuda, Bronze 8 × 5.7 cm.	South India
338.	14091/S177	TFAT/10 (D)	Lakshmi-Narayan, Bronze 10.7 × 7.8 cm.	South India
339.	13506/S25	TFAT/2 (D)	Dandayudhapani, Bronze 13.9 × 5.3 cm.	South India

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
340.	13500/S19	TFAT/3 (D)	Subhadra, Bronze 18.9 × 6.1 cm.	South India
341.	13491/S10	TFAT/9 (D)	Krishna, Bronze 17.4 × 9.4 cm.	South India
342.	13484/S3	TFAT/12 (R)	Kalyanasundaramurti, Bronze 48 × 24 cm.	South India
343.	13502/S21	TFAT/1 (R)	Lakshmi, Bronze 15.7 × 5.1 cm.	South India
344.	512AG/S70	TFAT/13 (R)	Vishnu with Gandharva and Vishnudatta, Bronze 22.3 × 20.8 cm.	South India
345.	13497/S16	TFAT/7 (R)	Vishnu, Bronze 19.7 × 20.8 cm.	South India
346.	13487/S18	TFAT/11 (R)	Rama with Sita and Hanumana, Bronze 41.4 × 30.9 cm.	South India
347.	NS3779/A9979	G11/138 (R)	Skanda, Bronze 19.3 × 10.5 cm.	South India
348.	NS3778/A9955	G8/4 (R)	Seated Vishnu, Bronze 15.8 × 11 cm.	South India
349.	NS3780/A9954	G8/13 (R)	Sridevi, standing, Bronze 17.9 × 6.8 cm.	South India
350.	NS3781/A9986	G9/1 (D)	Vishnu, Bronze 23 × 9.6 cm.	South India
351.	NS3782/A9980	G8/19 (R)	Ramachandra, Bronze 18.6 × 10.3 cm.	South India
352.	NS3783/A9956	G8/16 (R)	Dancing Krishna, Bronze 13.1 × 5.6 cm.	South India
353.	NS3784/A9965	G8/17 (D)	Garuda, Copper & Brass 8.3 × 7 cm.	South India
354.	NS3959B/A9982	G10/2 (R)	Nataraja, Bronze 105 × 83.5 cm.	South India
355.	NS 4261/A9949	G11/91 (R)	Nataraja, Bronze 105 × 89 cm.	Unknown (South India)
356.	NS4376/A11676	G11/21 (R)	Bhudevi, standing, Bronze 9.2 × 4.2 cm.	Unknown (South India)

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Sl. No.	Acc No.	Code as per charge list and location	Description, material and size	Provenance
357.	NS4383/A11684	G11/22 (R)	Bala-Krishna, Brass 5.6 × 5.1 cm.	Unknown (South India)
358.	NS2286/A9945	G5/4 (R)	Bronze Nataraja 90 × 53 cm.	Unknown (South India)
359.	90/84	RD/St. Cp. (R)	Bronze Vishnu 7 × 4.1 cm.	Unknown (South India)
360.	90/86	RD/St. Cp. (R)	Bronze Siva 6.6 × 2.4 cm.	Unknown (South India)
361.	90/87	RD/St. Cp. (R)	Bronze four-armed goddess 7.5 × 4.1 cm.	Unknown (South India)
362.	90/88	RD/St. Cp. (R)	Bronze two-armed female figure 7.3 × 2.7 cm.	Unknown
363.	90/90	RD/St. Cp. (R)	Bronze two-armed female figure 6.2 × 2.9 cm.	Unknown (South India)
364.	90/91	RD/St. Cp. (R)	Bronze seated female figure 5.8 × 3.4 cm.	Unknown (South India)
365.	Nil	G11/114 (R)	Buddha seated, Bronze 16 × 13.4 cm.	Unknown (South India)
366.	Nil	STCP7/SF3 (R)	Bronze, four armed standing male deity 38.8 × 22.1 cm.	Unknown (South India)
367.	NS4371/A14110	BMAG/AS/17/13 (D)	Brass Linga (?) 7 cm. long	Unknown (South India)
368.	NS4372/A14060	BMAG/AS/17/13 (R)	Pedestal of images 11 × 4 × 2 cm.	Unknown
369.	13217/A16247	RD/1/WA (R)	Bronze Vishnu, seated 47 × 26 cm.	Unknown
370.	97/4	RD/St. Cp. (R)	Image of Mahisamardini	Unknown

* Note : R—means Reserve, and D—means Display in the Gallery

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ARCHITECTURE OF MUGHAL INDIA*

R. Nath

Architecture of Mughal India authored by Catherine B. Asher, Assistant Professor in the Department of Art History, University of Minnesota, (Minnesota U.S.A.) constitutes part-4 of Vol. I of the Series : 'The New Cambridge History of India' (Cambridge University Press, Cambridge, 1992, pp. xxxi+368, 226 pls). She studies it in seven chapters : 1st devoted to 'Precendents for Mughal Architecture', 2nd to Bābur and Humāyūn, 3rd, 4th, 5th and 6th Akbar, Jehāngīr, Shāh Jehān and Aurangzeb respectively and the last to the later Mughals. It would suffice here, owing to paucity of space, to examine a few important points only.

The first chapter deals with the sources of Mughal inspiration. Truly, the Mughals did not begin on a clean slate and they made full use of the Sultanate period (1192-1526 A.D.) legacy. But the way she has tried to trace and identify it, is neither impartial and objective, nor historically correct.

Bābur was recially a Mīrānshāhī Tīmurid Barlās Turk; he spoke Turkish (nor Persian); and be belonged regionally to Central Asia but, in her very opening sentence, she identifies him as "a descendant of the Iranian House of Timur" (p.1). This is a new discovery of her own.

Her statement that Mughal architecture borrowed even from European sources (p.1) seems to have been made, calculatedly, for the pleasure of the 'white' people (Europeans and Americans) alone. The medieval travellers and British authors did the same (from 17th to 19th century A.D.) and they also wrote for their countrymen only, which was how many fantastic theories of Italian origin of the Taj-design and its inlay-art, for example, were planted on this study. If Shāh Jehān used a few pietra-dura, marble plaques in the throne-chamber of his Dīwān-i-'Ām in the *Red Fort* Delhi, it does not mean that the 'inlay'/art in Mughal architecture was inspired by, and developed from, these imported pieces. Earlier examples exist and she knows fully well, as her own analysis shows, that this art grew and developed indigenously. *(Mughal architecture did NOT borrow from European sources.*

Her statements that the construction in the *Quwwat'ul-Islām Masjid* Delhi is "strictly trabeated" and that "trabeated buildings continued even through the Mughal period as one major mode of construction" (p.4) are

* A Book review article

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correct. But if this technique was not a "revival or even conscious adaptation of Hindu forms" (p.4) as she tries to assert, how do these forms, *e.g.* pillar-bracket-and-lintel; bracket-and-*chhajjā* ; pendentive in the phase of transition; and a wide variety of flat ceilings appear in Mughal architecture so predominantly, *e.g.* at Fatehpur Sikri ?' Was this not an indigenous thing incorporated in the style and, if not from indigenous sources, were these features inspired from Iran ? To deny the indigenous element in this style would be to deny the fact that it has grown from the soil like a big banyan tree. It is a pity that she wants to confine this art to the status of an exotic plant growing from a vase, without any relationship with the land where it has grown and the people who have made it what it is.

The latter part of her statement : "This screen (of *Quwwat'ul-Islām Masjid* Delhi) is richly adorned with vertical bands of carved calligraphy and naturally growing vines" (p.4) is wrong. These are not 'vines' but 'wave' designs (*lahara-vallarī*)[1], pure and simple, and there is no vegetational content. Obviously, she has not been able to identify this typical indigenous motif correctly.

She notes fancifully that the quranic inscriptions in the tomb of Iltutmish at Delhi commence "in India the tradition of paradisical imagery for tomb construction" which was used later "in the entire conception of the monument" (p.5). This is W. E. Begley's and her own and very personal surmise. The *Hadiths* which, in authority, rank second only to the *Quran*, definitely prohibit depiction of Quranic Verses on tombs; as a matter of fact, they forbid making of monumental tombs themselves,[2] and in view of this total prohibition, this interpretation of the use of calligraphy in architecture is 'patently absurd' to use Begley's own phrase. These are design, pure and simple, like geometrics and arabesques, and no Islamic symbolism can be legitimately ascribed to them.[3]

Though she is very averse in using the term 'Hindu' because, she says, it is a 'sectarian connotation" (p.6), she freely uses the term 'Islamic' in the whole text, probably because, she thinks, 'Islamic' is not a sectarian connotation. In fact, she uses the word 'Islamic' most frequently (*e.g.* thrice on p.1 only) to denote anything and everything related to the medieval period. She uses it indiscriminately with dynasties which were, in fact, Turk or Afghān and, obviously, her preference is to use and popularise this religious connotation instead of the correct racial one. To her, again, it was the Islamic conquest of India in 1192 A.D. (p.1) and it was not a Turkish conquest. This is to deny the political content in the campaign of Sulṭān Shiḥābu'd-Dīn (Muizu'd-Dīn) Muḥammad Ghorī (Muḥammad bin Sām) and to invest it with a religious mission which it did not have. She has used the term 'Islamic Architecture' to denote the Muslim Architecture of a period or a region of India and, all along, she avoids to use the correct social connotation 'Muslim', and prefers to use the religious one *viz.* 'Islamic' which is, in fact, a misnomer in most of the cases, *e.g.* in Gujarat because the religion of Islām had absolutely nothing to do in the evolution of this regional style so much so that in some buildings there is not even an arch. Likewise, she

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prefers to designate Sultanate period buildings 'Islamic Structures' instead of identifying them regionally, socially or racially which are always more decisive considerations in the evolution of an art in all ages and in all countries. It is all but deliberate. The phrase 'Indo-Islamic' is her motivated choice, which she uses instead of 'Hindu-Islamic' or 'Hindu-Muslim'. If she wanted to avoid a sectarian connotation honestly, as she professes, the phrase 'Indo-Muslim' could have been the only correct term.

It must be pointed out emphatically that 'lotus' is certainly 'Hindu' and it has a 'Hindu' symbolism,[4] but how a Sultanate period building : The Quṭb Mīnār, the Hauḍ-i-Shamsī and the Tomb of Iltutmish; the 'Alāī-Darwāzah and the Hauḍ-i-'Alāī; the Minārā-i-Zarrīn of Koṭlā Fīrūz Shāh and his numerous canals, bunds and tanks, for example, could be 'Islamic' and not 'Muslim' ? Obviously, she wants to impose a particular point of view upon this study.

Being too apparent to be denied, she admits the dominant role of temple traditions in the evolution of the Sultanate Architecture of Gujarat, but restrains it to pure *forms*, without "their original meaning" (p.10). She claims that these forms came with the local Hindu artisans and these should not be associated "with any particular sectarian tradition" (p.10). This is a silly argument. Architecture is a fine art and not a sect. If Temple architecture is inspired primarily by Hindu philosophy and religion, it does not mean that its forms too are sectarian. For example, such indigenous elements as pillar (*stambha*), strut (*madala*), corbelled-ceiling (*vitāna*), niche (*rathikā*, *toraṇālaya*) and buttress (*vapra*) have been freely and emphatically used in the Muslim Architecture of Gujarāt without any sectarian affiliation, as they were used earlier in Jaina shrines, without any religious discrimination. It was not a sectarian but an art-tradition, and she is cunningly trying to distort its complexion with a view to deny it. The simple fact remains that these indigenous architectural elements constitute the distinctive characteristics of the medieval art of Gujarāt and there is no need to twist the meaning of this phenomenon.

There is an obvious attempt, throught the text, to connect everything with Afghānistān, Irān and other Muslim countries (Ebba Koch does exactly the same thing on the basis of an illusionary 'resemblance') to a deliberate negation of the contribution of indigenous things in the making of the medieval architecture of India. Her approach is biased. She is treating this art as if it is just another variation of what she calls 'Islamic Architecture', forgetting how overwhelmingly does this differ from any other typical art of Islam. Is there any building similar to the Taj Mahal anywhere else ?

Very frequently does she make such over-zealous and wrong statements as : "inlaid white marble was a dominant material in both Gujarat and Mandu" (p.10). It was NOT. The whole book is full of such mis-statements. Architecture is a visual subject and site-study is the primary condition of this discipline. To know it, one has virtually to live with the monument, the environment and the people. Those who do not

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know the language and the culture of the region are certainly handicapped.

Her assumption that the citadel of *Dīn-Panāh*, begun by Humāyūn "was probably finished by Sher Shāh" (p.12) is wrong.[5] He did not rule from 1538 to 1545 as she states, but from 1540 to 1545, and during this extremely short reign, he remained overwhelmingly busy with political, military and administrative measures. His engagements during this period are precisely known[6] and by no stretch of imagination can he be associated with Humāyūn's *Dīn-Panāh*.[7] The attempt to attribute the construction of *Qal'ā-i-Kuhnā Masjid* of this fort to Sher Shāh, on the false assumption that it "follows forms and utilizes motifs seen" (p.12) at his grandfather Ibrāhīm Sūr's tomb at Nārnaul, which it does not, is misconceived and misleading, and is not sustained either by historical facts or on stylistic grounds. It belongs to Humāyūn and its construction "may be assigned to the period from 1533 to *c.*1565, with an interval of about 20 years from 1535 to 1555."[8]

Whom does she refer to when she makes such frequent, in fact, very frequent, remarks as : "to imagine, as many do" (p.1); "to assume, as most writers have done" (p.4) ; and "attributed by some" (p.12) ??? Who is this mysterious author who haunts her and whose works she, thus, constantly refers to, indirectly, with a view to refute ? Specifically, for example, who is the author who attributed the *Qal'ā-i-Kuhnā Masjid* to Humāyūn which she is disputing ? It is definitely in the *History of Mughal Architecture*, Vol. I (new Delhi, 1982) pp. 160-73 by R. Nath, and nowhere else, that this mosque is treated exhaustively and is attributed to him and, without any doubt, she is referring to this 'mysterious' author in a concealed way.

In her Bibliographical Essay (pp. 335-56), she lists the works she used in the preparation of each chapter. It is amusing to note that while she lists, in the first chapter, a host of such minor and irrelevant articles as F. A. Khan's 'Banbhore...' and her own husband's 'Gaya : Monuments of the Pilgrimage Town" ; and books as H. Bhisham Pal's *The Temples of Rajasthan;* and even this 'mysterious' author's *The Art of Chanderi*, which too has little relevance, she does not mention his *History of Sultanate Architecture* (New Delhi 1978) which covers the entire scope of this chapter of her book. Similarly, a long list of irrelevant and practically useless articles and books is given in the bibliography of its second chapter : 'The Beginnings of Mughal Architecture', but this 'mysterious' author's *History of Mughal Architecture* (abb.*HMA*) Vol. I (New Delhi 1982) has not been mentioned. It deals, comprehensively, with the architectural projects of Bābur and Humāyūn, and it is in this book, in fact, that the *Qal'ā-i-Kuhnā Masjid* Old Fort Delhi has been attributed to Humāyūn, which she is trying to refute. She has used it. Why then she did not mention it in the bibliography ? She laments that "A monograph and interpretative essay on the Gwalior palace is badly needed" (pp. 336-337). This palace has been studied exhaustively by this 'mysterious' author in this book (*HMA*-I, pp. 25-76) and she has used this mateiral too. Again, in the bibliography of the third chapter she does not mention

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this 'mysterious' author's *History of Mughal Architecture*, Vol. II (New Delhi 1985) which is entirely devoted to the Personality Architecture of Akbar (1556-1606) and his *Architecture of Fatehpur Sikri* (Forms, Techniques & Concepts) (Supplement to *HMA*-I & II) (Jaipur 1988). She has been reading and using extensively these books of this 'mysterious' author almost as her base-books, and she has also been trying to refute him, though without naming him. Why is she afraid of coming face to face, to counter and refute his errors if any ? perhaps, because she wants to conceal the fact, from the general reader, that she has drawn her basic data from him and to name him would expose the source of her 'novel' ides. Of course, this is not piracy, but it is not honesty too.

And also, secondly, because, the vindication of the indigenous determinants in the evolution of the medieval architecture of India, which is the main thrust of this 'mysterious' author's works, is not conductive to the existence of the 'historians' of her class; it nullifies their fake 'theories' and demolishes their citadels of 'scholarship' which they have assumed without even knowing the language of the region where these monuments have grown, only by the sheer force of their munificent monetary resources and excellent library, photographic and other mechanical equipment facilities; arrogance and overconfidence verging on a superiority complex; and, above all, their 'white' colour which is still, unfortunately, held in awe and esteem in this poor country where intellectuals also suffer by a slavish mentality. Be it as it may, this is not a method of historical writing or historical criticism. One has to be frank, fair and honest; and direct. In fact, what she does is diplomacy and one fancies if, instead of an art-historian, she could have better made a diplomat, a Ms. Robin Raphel, for that matter.

Her statement : "Trabeated, flat-roofed structures continue a long-standing Indian tradition. They in no way represent a style that can be classified as non-Islamic" (p.13) is self-contradictory. Or does she want to say that flat-roofed Indian structures are Islamic ?

She frequently uses such terms as 'Lodi prototypes' (p.14) carelessly, without any relevance to the evolutionary process. 'Prototypes' is a difficult word and one should not use it loosely, without keeping its meaning in view.

Her view that the lake of Sher Shāh's tomb at Sāsārām is a visual allusion to the waters of paradise described in the *Quran* (p.14) is absurd, firstly, because making a monumental tomb is technically prohibited under the *Shariat* ; and, secondly, because there is absolutely no prescription to represent the mythical Quranic paradise in art or architecture. She has failed to understand the meaning and import of a 7th century A.D. Arabic textual reference in the context of a 16th century A.D. Indian monument and, like Begley, she is trying to impose a non-existent ficititious Islamic symbolism on this study.[9] That such a practical man as Sher Shāh drew on the orthodox religion of Islām is a wrong hypothesis. If this was an incarnation of the Quranic paradise, why it is not there in any other Muslim country ? On the other hand, such island structures

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were commonly built in India from ancient times and it is an indigenous phenomenon. Countless *Vāstu*-texts prescribe proximity to water, which was deemed to be 'nectar' (*amrit*), a basic condition for selection of site for building temples, for example :

कृत्वा प्रभूतं सलिलमारामान विनिवेश्य च ।
देवतायतनं कुर्याद्यशो धर्माभिवृद्धये ।।

(*Bṛhat-Samhitā*, LVI.1 of 4th-5th century A.D.)

(For fame and religion, a big tank with abundant water should be excavated and a garden laid and there the temple should be built).

Asher discusses the *Mān-Mandir Palace* of Gwalior under 'Non-Islamic Sources', but comments that "it is wrong to consider the Gwalior Palace uniquely Hindu in form" (p.15). If it is non-Islamic and it is also not Hindu, then what is it ? In fact, she is overwhelmingly confused, throughout the book, on the meaning and use of such denominations as 'Hindu' and 'Islamic' and, more often than not, she has 'misused' and 'abused' them.

She has been able to understand and appreciate the inspiration which early Mughal Architecture drew from the *Mān-Mandir* Gwalior only partially. Among the inspirations which subscribed to its formation, Gwalior's was probably the largest share and this has been enumerated comprehensively by this author.[10] In respect of internal planning; making of 'facade' and 'superstructure'; treatment of 'openings'; 'roofing' and other structural features; stone-carving as ornamentation etc., Akbar's buildings at Agra and Fatehpur Sikri are greatly indebted to the Gwalior Palace. But, probably, her motive to give this art a distinctive 'Islamic' character prevented her from making full use of this valuable data.

Her surmise that the architect of Humāyūn's tomb came from Bukhārā (p.16) is erroneous and biased. Every builder engaged on a project does not become its architect. The tomb was built between *c.* 1558 and 1570, during Akbar's reign, when he had also started construction in the Agra Fort and Fatehpur Sikri, and it is a misnomer to ascribe its design which has such dominant indigenous features as the use of four *chhatrīs* around the main dome, to a artisan from Bukhārā who, not being conversant with nuances of the stone art, would have exposed its exterior for display of glazed-tiling, and instead of organizing mass-and-volume of which this tomb is a pioneer Mughal example, he would have taken recourse to 'line-and-colour' like the *Sabz-Burj*, which stands just facing this tomb at a little distance.[11]

Her identifications are generally wrong, *e.g.* it was not *Bāgh-i-Gul Afshān* which served as Bābur's temporary burial site, but *Bāgh-i-Zar Afshān* which has been distinctly mentioned in the contemporary texts. *'Chauburj'* was certainly his *'Supurdgāh'*.[12]. Identification of Adbar's *Jharokhā* at the *Dafter-Khānah* is also wrong. The *Motī Masjid* of *Red Fort* Delhi was not commissioned by the Puritan Aurangzeb, but by Shāh Jehān and the former only had it completed after the latter's deposition. The whole book is full of such historical errors.[13]

She has studied this art exclusively from the point of view of 'patronage', hence such

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sub-headings of the book as 'Sub-Imperial Patronage', 'Patronage of the Emperor and Empress', 'Nur Jehan's Patronage', 'Patronage of the Princes and Nobility', 'Construction by the Hindu Nobility', 'Shah Jehan's Patronage', 'Buildings under the Non-Muslim Nobility', 'Aurangzeb's Patronage', 'Princely Patronage' and 'Patterns of Patronage'. There is an obvious emphasis on the Personal Factor, and such other determinants of the evolutionary process as Geo-Physical and Historico-Cultural are almost ignored. Consequently, it offers no stylistic study of the art and there is no stylistic classification of the subject. It is a complete hodge-podge, chronologically as well as subject-wise, of Sultanate, Mughal, later Mughal and British period buildings of all denominations : tombs, mosques and palaces, as well as temples and modern public buildings, of the central and regional styles and sub-styles and, as such, the book is wrongly titled as 'Architecture of Mughal India'. It goes beyond it all around. She does not make a 'style' or styles. It must be borne in mind, in this reference, that the classical Mughal style came to an abrupt and towards the end of the 17th century A.D. and, thereafter, its elements filtered into what can be termed as 'popular' or 'people's' art which gradually developed into a national style of architecture with distinctive characteristics, with regional and local variations. She has missed these subtle points of the evolutionary process.

It is owing to this handicap that she has not been able to notice some of the most important developments of stone art under the Mughals, *e.g.* the growth of ornamental arch on the openings and pendentives (sometimes corbelled) in the phase of transition — without lateral thrusts.

She has used a wrong terminology throughout the book and a few examples would suffice. *'Chhaparkhaṭs'* with *chaukhaṇḍī* roof have been used on the piers of the Jaunpur bridge and these are not *chhatrīs*, as noted by Asher (p.87). *Chhaṭrī* is never rectangular (oblong) and it is always square, hexagonal or octagonal. Shāh Daulat's tomb has *bārahdarīs* on the corners flanking the dome and these too are not *chhatrī* as noted by a Asher (p.153). But she does not distinguish and uses the common term *'Chhatrī'* for everything : *Chhatrīs*, *chhaparkhat*, *chaukhaṇḍī* and *bārahdarī*. Similarly, she does not distinguish between 'eave' and *'chhajjā'* which she uses synonymously. She does not notice such important and popular features of Mughal Architecture as *'tibārādālān'* and *'dochhattī'*. Wrong terms have similarly been used for such features as *chandovā*, *chowk*, *chowki*, *ḍyoḍhī*, *gaukh*, *Jālī*, *jhajjharī*, *jharokhā*, *khaprel*, *koṭhā*, *ladāo*, *paur (polī)*, *pol*, *rāoṭī*, *rathikā*, *rehaṇṭ* etc. In order to understand and interpret the art of a region, it is absolutely necessary to be fully conversant with the language, literature and culture of that region.[14]

It must be reiterated, lastly, that her narrative suffers by her personal bias which she imposes upon this study without any restraint or control from the editors of the series. Here is a selective study from a particular point of view and, obviously, this book has been written for an exclusively 'white' clientele.[15]

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REFERENCES

1. For full details see this author's article : '*Lahara-Vallarī* in Indian Art', *Indian Museum Bulletin* Calcutta, X-2 (July 1975) 57-70, 23 pls & 1 fig; and *Elements of Indian Art & Architecture* (Jaipur 1986) pp. 59-84, pls. XLV-LXXVII.

2. For full details of this matter and a critique on Begley's fantastic notions, reference may be made to this author's articles : 'On the Study of Indo-Muslim Architecture' *Indica* Bombay, Vol. 22 No. 1 (March 1985), specifically its sub-head entitled, 'Implanting of Islamic Symbolism' pp. 46-54; and 'A Survey of the Study of Indo-Muslim Architecture' *Purātattva* New Delhi (Bulletin of the Indian Archaeological Society) No. 25 (1995) pp. 40-56.

3. How zealously the American scholars are propagating this 'thesis' and trying to implant this purely subjective interpretation upon this study is also amply demonstrated by an event of singular importance. This author contributed a number of articles to the *Dictionary of Art* London, on the buildings of Agra, Fatehpur Sikri and Delhi. Asher was on its editorial board and in this author's article on the Taj Mahal, she inserted the following words :

   "...also employ the *symbolism of Islamic religious themes*, evident especially in the textual passages chosen for calligraphic decoration (see Begley, 1979)".

   This was not there in the original article and she inserted it herself arbitrarily. This author deleted it at the 'proof' stage and wrote a letter, dated 8 August 1991, to the Senior Area Editor : South Asia, "I have deleted some statements which are not mine....and I request you kindly to see that erroneous views about Mughal Architecture, which have been conclusively refuted, are not circulated to the world *in my name*".

   The editor, Jane Shoaf Turner wrote back to me in reply in her letter dated 2 October 1991 : ..."we are concerned that you were unhappy with our editing and woulld like to assure you that these articles will not be published without your permission." In her subsequent letter dated 15 January 1993 she confirmed : "We have taken care to *remove the remarks* on Mughal Architecture to which you expressed an objection. We have no wish to include any views in your article other than those approved of by you, and I am glad that you were able to use the proofs sent you to make your wishes clear."

   Over and above editing, this was interpolation.

   Asher also inserted in entirely wrong and incorrect statement in another article of this author, that "Babur brought craftsmen from Central Asia". Babur never mentioned that he brought stone-cutters, artisans or craftsmen from Central Asia and he always admired the builders of the Jamuna-Chambal region. In his autobiography *viz.* The *Tuzuk-i-Bābur*ī or the *Bābur-Nāmah*, he noted, under the heading : "Advantages of Hindustan" :

   > "Another good thing in Hindustan is that it has unnumbered and endless workmen of every kind. *There is a fixed caste for every sort of work* and for everything, which has done that work or that thing from father to son till now. Mullā Sharaf, writing in the *Zafar-Nāmah* about the buildings of Tīmūr Beg's Stone Mosque (at Samarqand), lays stress on the fact that on it *200 stone-cutters worked from Āzarbaijān, Fārs, Hindustān* and other countries. But 680 men worked daily on my buildings in Agra and of Agra Stone-cutters only; while 1491 stone-cutters worked daily on my buildings in Agra, Sikri, Biānā, Dholpur, Gwalior and Kuil (Koil, Aligarh). In the same way, *there are numberless artisans and workmen of every sort in Hindustan.*" (The *Bābur-Nāmah*, tr. A S. Beveridge, 2 vols in one, New Delhi 1970, p.520).

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on another occasion, on the completion of his garden and buildings at Dholpur, he noted (*ibid*, p. 634) : "Gifts were made to the stone-cutters and labourers and the whole body of workmen in the way customary for master-workmen and wage-earners of Agra." He admired the native artisans throughout this work and he never mentioned that he brought craftsmen from outside, not this author made this statement in his article. *How and why then this patently wrong statement was interpolated in the article* ? This shows that a systematic attempt is being made by American authors *to distort* history of Mughal Architecture, *to undermine and subvert* the indigenous contribution to its development and to give it a specific *Islamic colour and complexion.*

4. For full details where of reference may be made to this author's *History of Decorative Art in Mughal Architecture* (Delhi 1976) pp. 10-19 & pls.
5. For full details, see this author's *History of Mughal Architecture* (abb. *HMA*) Vol. I (New Delhi 1982), pp. 131-50.
6. *Ibid.*, 136-37.
7. See *Ibid.*, 137-41 for fuller details.
8. For a full discussion, see *Ibid.*, 160-73.
9. This has also been discussed above in Para-(5) and the corresponding references 2 and 3.
10. Cf. *HMA*-I, *op.cit.*, pp. 25-76.
11. For full details of Humayun's tomb, see *Ibid.*, 242-275.
12. For full details, see *Ibid.*, 109-119.
13. In connection with her chapter-4 on Jehāngīr, reference may be made to this author's *History of Mughal Architecture*, Vol. III (The Transitional Phase of Colour & Design, Jehangir 1606-1627 A.D.) (New Delhi 1994) Pages 643, 48 colour and 315 b&w plates, 93 drawings and 25 original Persian inscriptions.
14. See for details, this author's *Historiographical Study of Indo-Muslim Architecture* (Jaipur 1991).
15. An equally realistic review of Ebba Koch's book *Mughal Architecture : An Outline of its History & Architecture*, by this author, is also due to be published soon.

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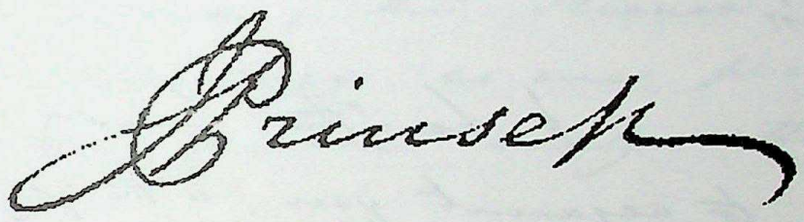

(Home Deptt., Public Br., 25 July, 1838, No.2)

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To G. A. Bushby Esqre
Secretary to Government
General Department

Sir

I have the honor to acquaint you, with reference to an application which I am about to submit for the consideration of the Honorable the Vice President in Council, that the British Association for the Promotion of Science, lately established by many distinguished men of science in England, has requested the Honorable Sir Edward Ryan, George Minto Esqre Major Benson, Captain D. Herbert Dr Turnbull Christie and myself to form a similar

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into an Indian Committee" to cooperate in the views and objects of the institution at home and the General Committee of the association has pointed out among other objects which may be successfully investigated in India, the science of meteorology as one peculiarly fitted for our early attention

2 All that is necessary for the prosecution of such a co-operative enquiry, is to obtain accurate registers of the Barometer, Thermometer and other instruments kept at selected spots by such gentlemen as may be willing to lend their assistance for the purpose; but it will be expected that the Committee on the part of the association provide the instruments required and these of the best description

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such as cannot readily be [illegible] of this distance from Simla

[illegible] can [illegible] [illegible] a number of Barometers and other instruments lying in store in the Surveyor General's office, which are not immediately required for any public purpose.

I am directed therefore to submit on the part of Sir Edward Ryan Resident and the other members, a request that the Surveyor General may be permitted to lend such of these instruments as he can conveniently spare to the Committee for the purpose above explained, with an understanding that they shall be returned

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as soon as a sufficient series of observations may have been completed.

5. I beg leave to bring to the notice of the Government that upon the representation of Dr Turnbull Christie, one of the members of the Committee the Madras Government has been induced to write to England for twenty complete sets of the best Meteorological Instruments and a note of instructions for their use drawn up by Dr Christie has been already telegraphed to the Madras Government.

I have the honour to be
Sir
Your most obedient
humble Servant

James Prinsep
Jun. Member and
Secy. to the Indian Committee of the British Association

Calcutta 17th Dec. 1832

Extract of a letter from the Secretary to the Meteorological Committee dated the 7 Jan. 1833 to the Secretary to the Government of Fort St. George.

Intimating that the Committee will be glad to receive the Meteorological Instruments promised by the Madras Government for the Indian Committee of the British Association.

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Genl Cons.r 18th December 1832.-

Read a letter from Mr James Prinsep Junior Member and Secretary to the India Committee of the British Association dated 17th December 1832.

Ordered that a Copy of the foregoing letter be transmitted to the Military Department from whence the necessary authority will be granted to the Sheriff Gunnum to lend such of the Meteorological Instruments therein referred to as can be spared to the India Committee of the British Association for the promotion of Science.

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Note on the Population of Benares

In the year 1800 a Census of the Population of this City was made by Goorpeeah Ulee Kolwal under the orders of Mr Deane, when it appeared that there were about 30,000 houses and 600000 inhabitants. By the examination of the data upon which the earlier assumption was made would have been sufficient to prove its total inaccuracy.

The houses were classed according to their height and an arbitrary rate of inhabitants assigned to each.

Kuch, Brick houses of 1 Story were supposed to contain 2
do — of 2 do — 2½
do — of 3 do 4
do — of 4 do 10½
do — of 5 do 15
do — of 6 do

and the whole statement bore of the same extravagant character.

The Nawab nevertheless was interested in swelling the list of tax-paying

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this rate upon a population would yield an annual revenue of [illegible], being on a coast as [illegible] with the Custom House returns, allowing a fraction for smuggling.

Upon other articles such as Tobacco & Betelnuts can be fixed because they must be estimated currencies and not exports. I have however appended a Table of several obtained from the Custom House which may prove useful in making comparisons with other Towns.

One of the chief utilities of a correct Census is that it introduces a right understanding as to what should be the produce of any tax levied upon the food the houses or the inhabitants of a Town. I remember once hearing a public functionary upbraided for laxity of diligence because the consumption of Ghee in the City of Benares fell so far short of what might have been expected upon a population of six hundred thousand.

Should the present document have the power of opening to the Government of the country the means of calculating, and maintaining

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Bean dues upon an equitable scale and the alleviating to the natives of the City the oppression and inconvenience inseparable from the levy of Town Duties where a cordon of Customhouse officers is empowered to search and handle every parcel, carriage and person, which approaches the Town I shall esteem my labours very amply rewarded and I shall look back with satisfaction hereafter at the last act of my official connection with Bunaras and the Committee of Local Improvement.

James Prinsep
late Secretary
Com Depts.

Banaras 25th December
1829

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To G. A. Bushby Esq.
Acting Secretary
General Department

Sir

In Continuation of My letter dated the 26th April last I have now the honor to submit a Bill for the price of the Marble Slabs used in paving the Vestibule of the Town Hall which has been debited to my Account in the Accountants General's Books

The sanction of Government to the enclosed Bill is I believe necessary to enable the Accountant General to write off the same to My Credit

I have the honor to be
Sir
Your Most Obedt. Servt.

James Kennedy
Supt. of Canals

Calcutta
the 10 May 1831

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No. 363.

Extract from the Proceedings of the Honble the Vice President in Council in the Military Department, under date the 24 December 1832.

No. 169

From Major G. Everest.
Surveyor General of India.
To Colonel W. Casement C.B.
Secretary to Government Military Depta.

Sir,

I have received with your letter of the 21 December. I regret to say it is out of my power at present to furnish any Barometers - all that are under my charge having been fractured up and despatched to the Upper Provinces, excepting two which are actually in use in keeping the Meteorological Register.

Survr General's Office,
22nd December, 1832.

I have &c

Ordered

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To

C. Morley
H. T. Prinsep } Esqrs
J. T. Dorin

Mint Committee —

Gentlemen,—

It is with great reluctance that I have to report for the information of your Committee, that I have lately been suffering from indisposition to such an extent as to incapacitate me from the performance of the duties of the Assay Office, and to render it necessary that I should leave the country to restore my health. I have the honor to enclose a Medical Certificate for your Committee's satisfaction.

2d. It seems essentially necessary for my recovery that I should absent myself from India for at least 18 Months, and it has been suggested that a sojourn at the Cape or a Voyage direct to England would be the most beneficial for my complaint.

3d. I should prefer on many accounts the latter but I fear according to the rules of the Honble Company's service I should forfeit the whole of my salary while absent, and perhaps indeed my appointment also; although the instance of my predecessor, having obtained leave to Europe, retaining the power of returning to his appointment, leads me to hope I might be indulged to the same extent.

4th I trust that under Mr. Burnin, the duties

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of the Office will be carried on in every way satisfactorily, but now that the manual labour of the Assay Department is so much increased an assistant to prepare and weigh the Assays is quite necessary, and I would suggest respectfully that Mr. William Greenway who is now assistant in the laboratory, may be advanced to the weight room temporarily on a salary of 300 (half that of the assistant Assay Master) –

5th. It will be for the Committee to suggest how the duties of Secretary to your Committee may best be performed.

Assay Office –
The 29th October 1838 –

I have the honor to be &c.
(Signed) J. Prinsep
Assay Master –

A True Copy

J. Prinsep

Secretary to the Mint Committee –

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We do hereby Certify on honor according to the best of our Professional Judgment after careful examination that we consider the case of James Prinsep Esq

to be of such a nature as to render a Voyage to Europe absolutely necessary towards the recovery of his health

J. R. McCattie
Presidy Surgeon

Calcutta
October 29th
1838

J. Jones
Mr Dr Dr
V. Dr

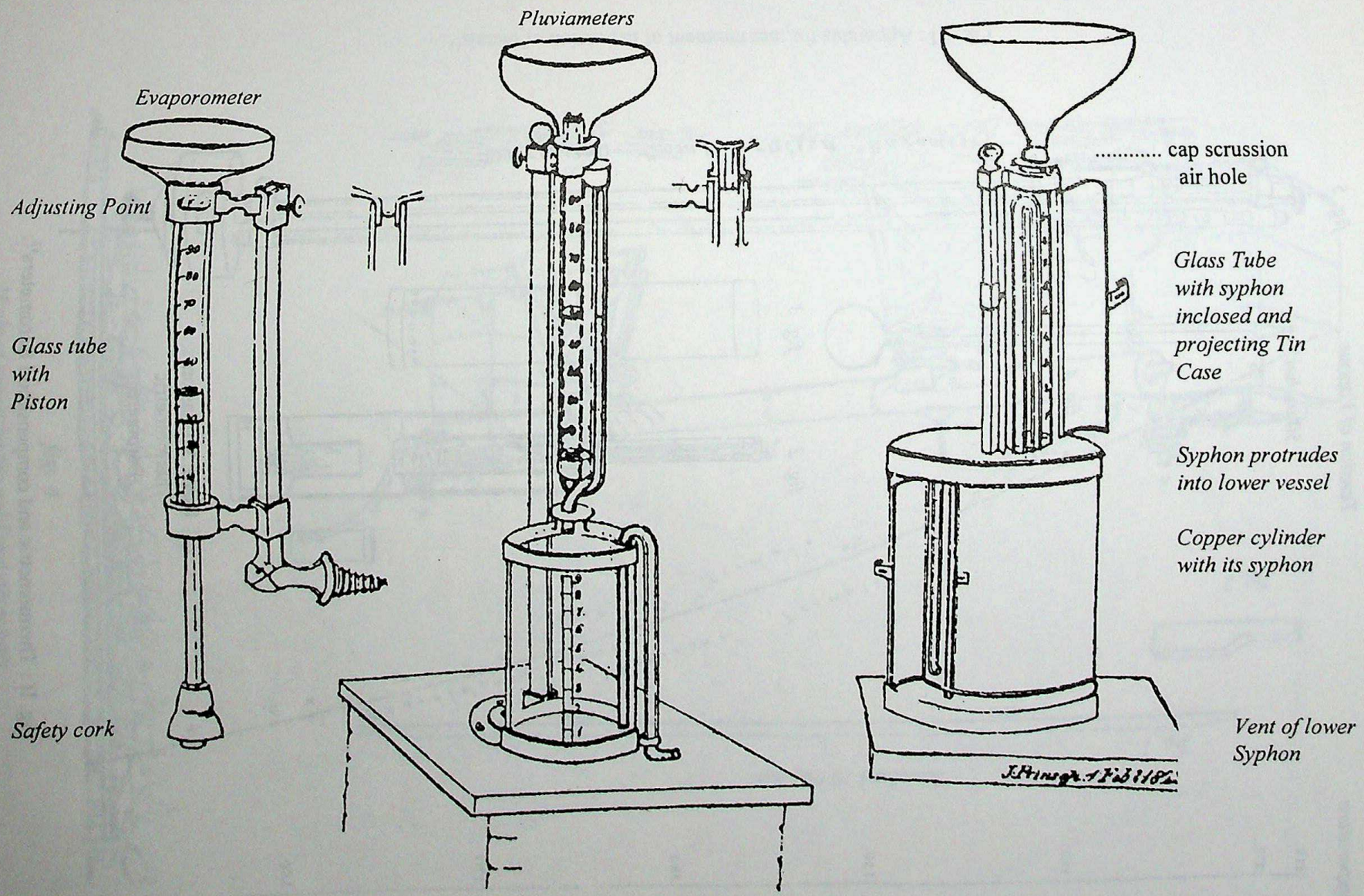

Fig. I : Evaporometer and Pluviameter of James Prinsep[7]

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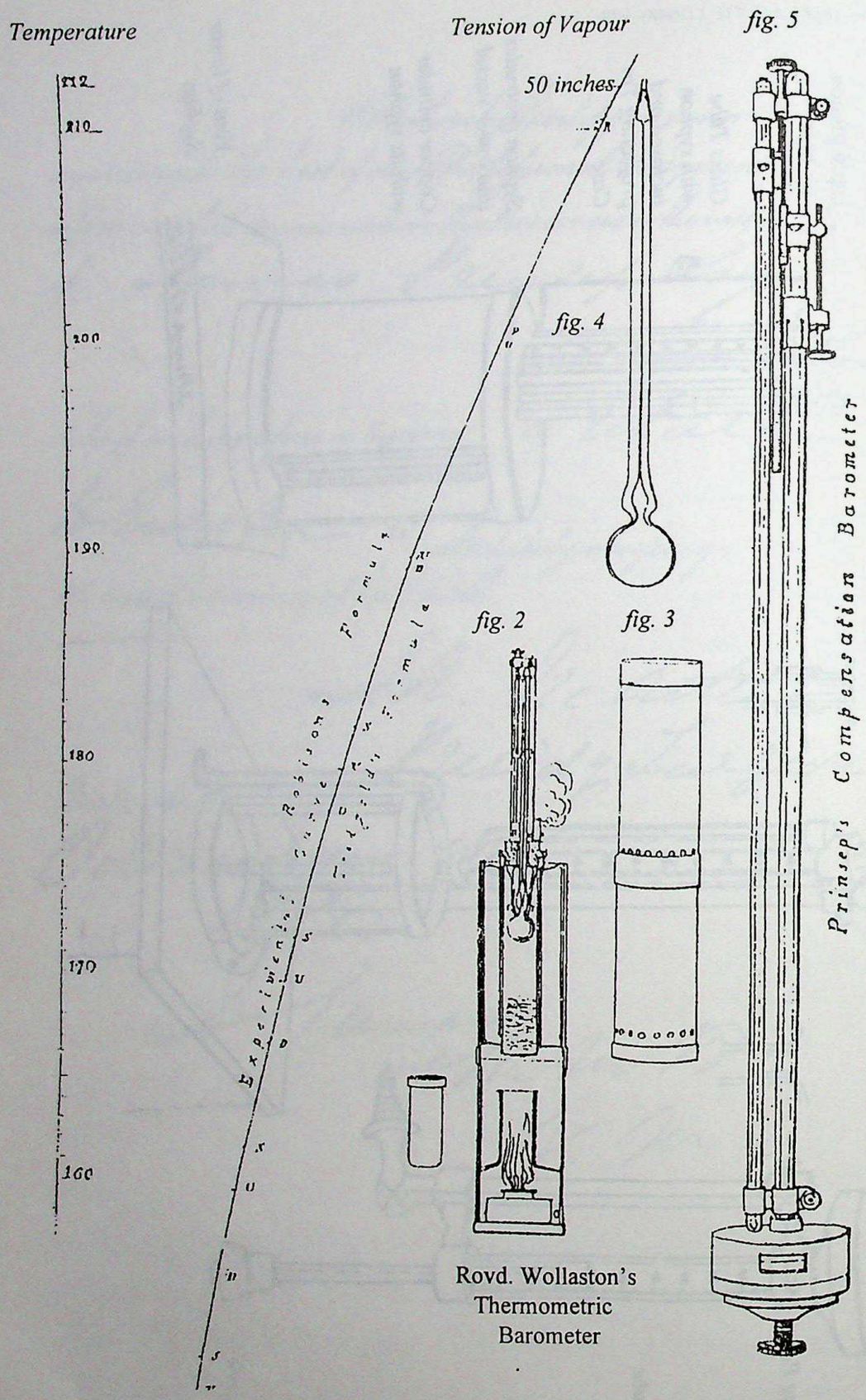

Fig. II : Thermometric and compensation Barometers[13].

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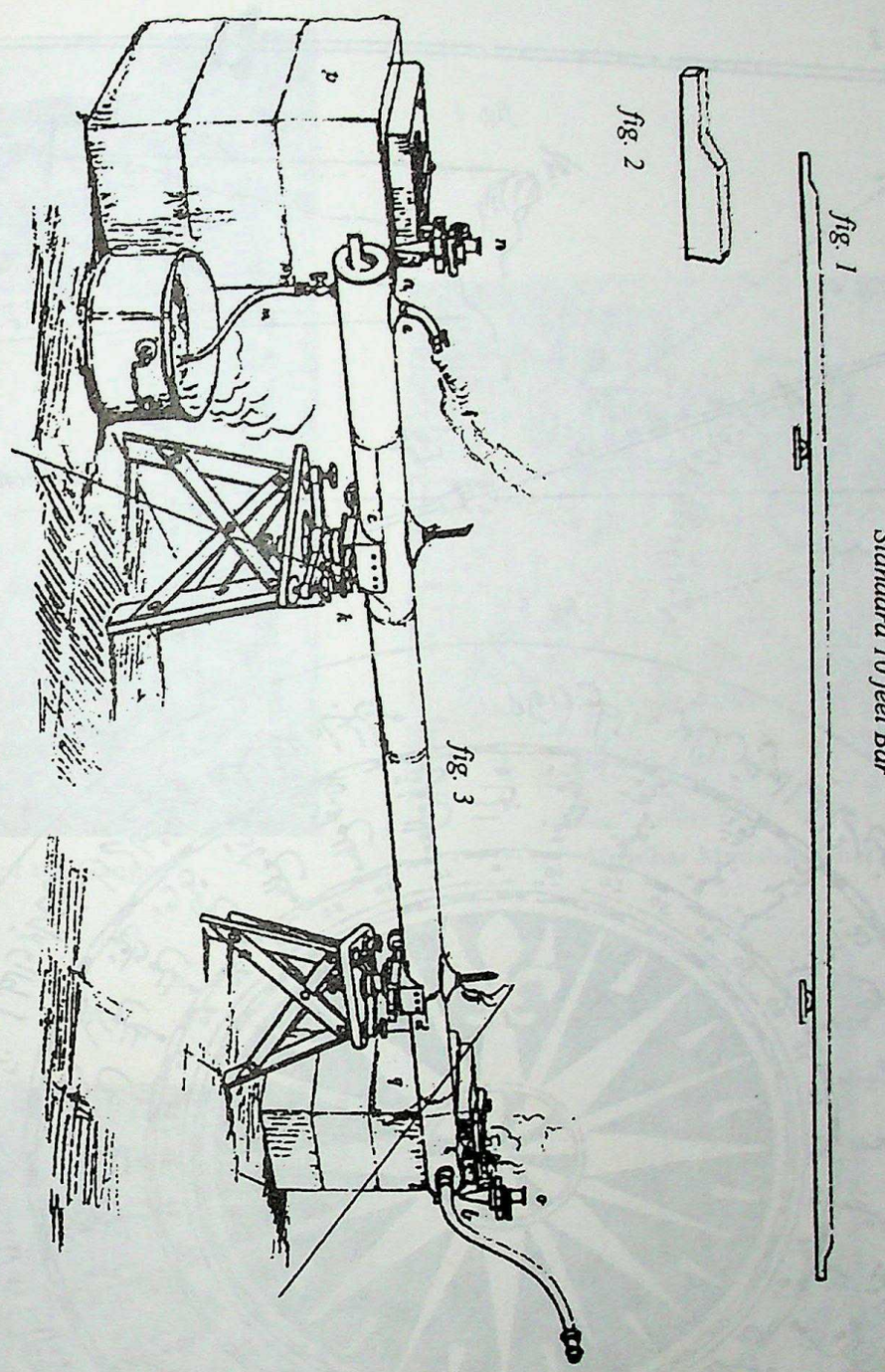

Fig. III : Apparatus for measurement of expansion of metals[18].

fig. 4

Mode of arresting the gold and silver bars.

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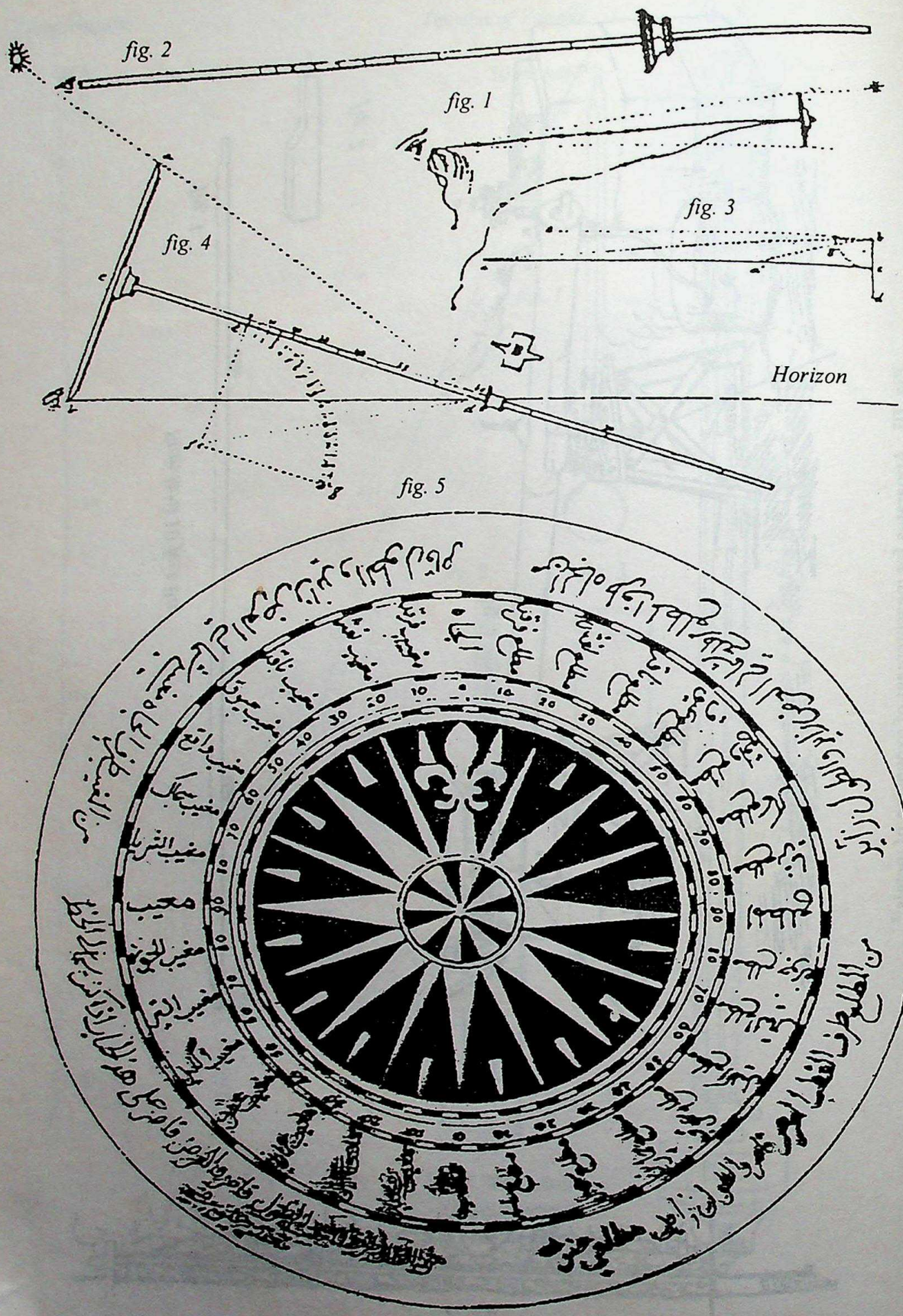

Fig. IV : Kamal, a medieval nautical instrument of the Arabs, studied by James Prinsep[35].

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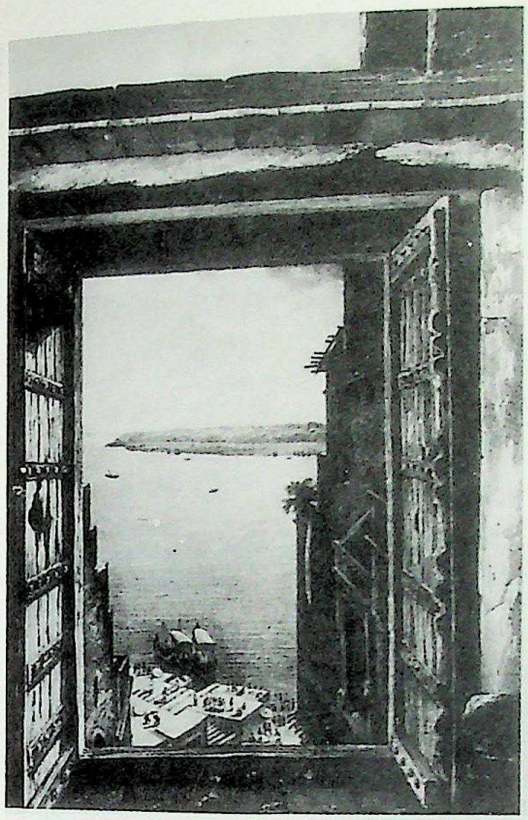
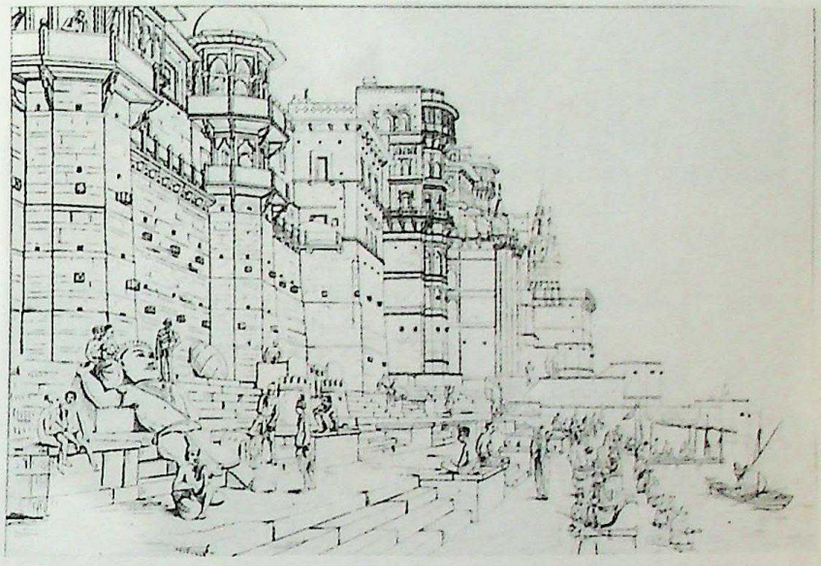
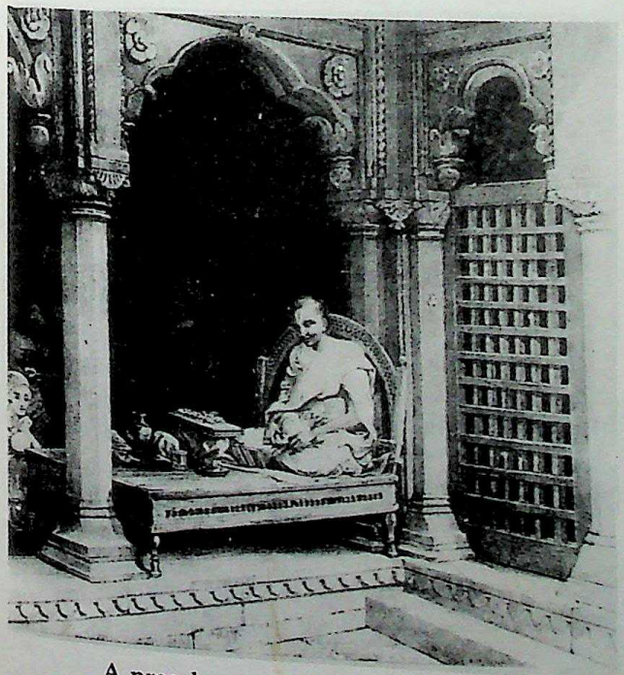
James Prinsep and his pictorial views of Benares



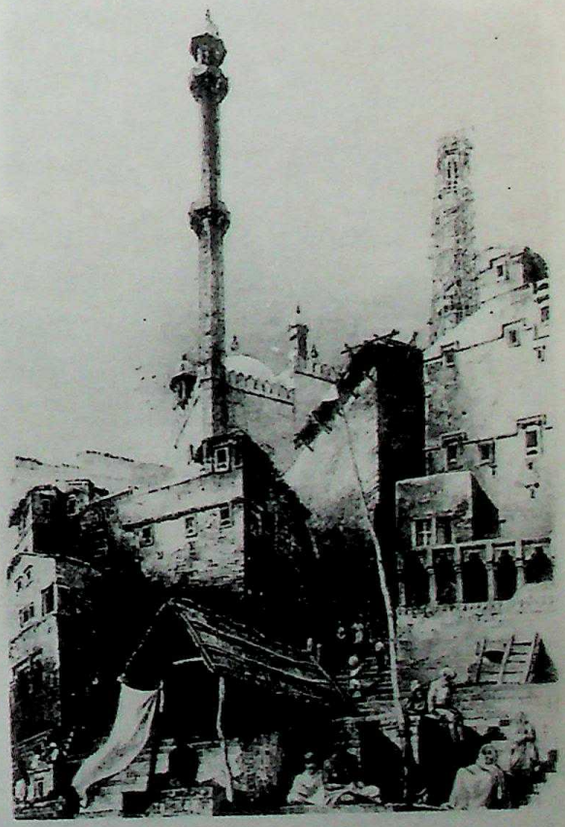
View of the Ganges



Shridhar Munshi's Ghat and Runa Mahal



A preacher expounding the *Puranas*



Madhoray's Ghat and Minarets at Benares

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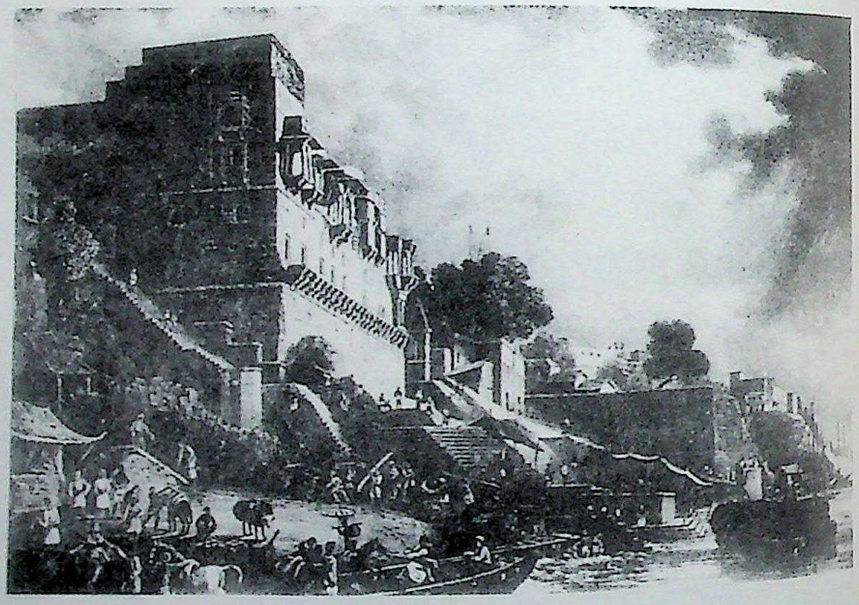
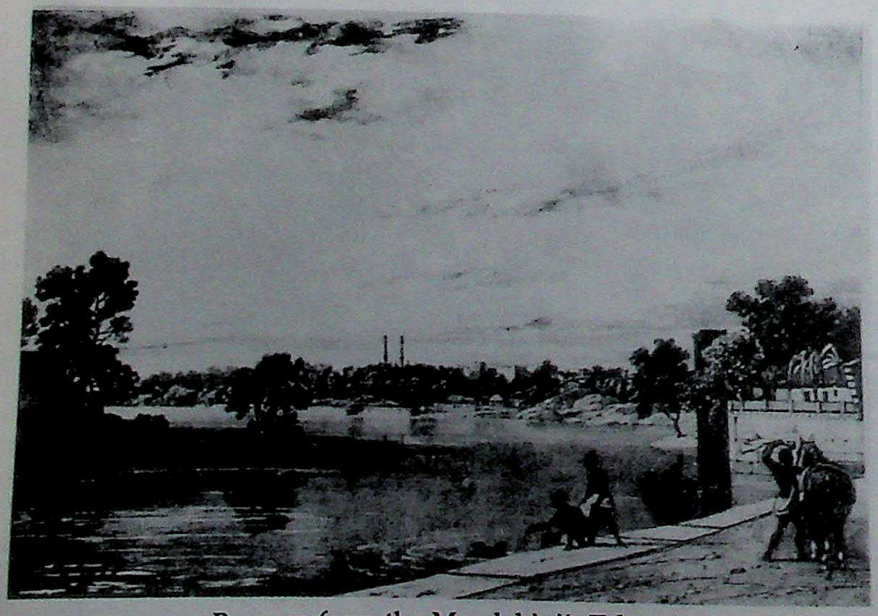
Benares



View of the Manmandir



Benares from the Mandakini's Talao

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CALCUTTA

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EDITORIAL NOTE

This issue of the Indian Museum Bulletin will serve various interests of the readers in knowing about conceptualisation of androgynous images in Indian mythology ; information bearing on climatic conditions and meteorological aspects derived from ancient scriptures of India, metallurgical practices during chalcolithic period at the hinterland of Tamralipta, a port town of ancient Bengal as also an account of centers of the Buddhist monastic medicine collected from both literary and epigraphic sources. The volume also includes a detailed account of conservation of two oil paintings preserved in the Indian Museum and the National Library, Calcutta. The concluding part of the descriptive list of the paintings possessed by the Art Section of the Indian Museum highlights the miniature paintings of India from the pre-Mughal to the 20th century products of Bengal school. We request the authors and publishers to send more books for review in the forthcoming bulletin.

September, 1999
Indian Museum, Calcutta

Shyamalkanti Chakravarti
Director/Secretary

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THE ANDROGYNOUS DIVINITIES IN HINDU MYTHOLOGY

CHIRARANJAN PODDER

The adjective androgynous—from Greek aner, andros = man and gyne = woman—describes a human species in which two sexes are united. Biologically speaking it is a hybrid. In Plato's Symposium[1] Aristophanes speculates on the nature of primeval man. According to this there were at the beginning of time (in illo tempore) three sexes : a male, a female and a third, in which the other two appeared united and which was called androgyn. These androgynes were spherical, and had four hands, four legs and one head with two faces looking in opposite directions. As they posed a danger to the gods, Zeus divided them into two halves as a punishment. According to Ovid[2] Hermaphroditos, a son of Aphrodite and Hermes, who became one with the nymph Salmacis bore the characteristics of both sexes—above hers, below his. This is the origin of the term hermaphrodite.

Yet androgyny is not just androgyny. Its various facets have to be kept in mind : "to say that God is androgynous is very different from saying that God is an androgyn"[3]. The first part holds that the category of sex is not applicable to God. Asexuality stands as a symbol for totality and perfection, which is beyond the dimension of human beings. This philosophical concept is incorporated in Brahman : Brahman, It, is nirguṇa. The second part relates to anthropomorphic divinities which being in possession of the characteristics of both sexes and in so far superior to humans are nevertheless defined by sex. Bisexuality stretches between the poles "neither nor" and "as well as" ; the last group constitutes the personified Hindu pantheon. But also within this group there are variants.

Androgyny or bi-sexuality of divinities is common in archaic and complex cultures and transmitted by diffusion.[4] This speaks of the great attraction of this idea. At this juncture it seems appropriate to illustrate the religious importance of this phenomenon with several examples[5] and their various forms[6/7] (some of them are found in Indian context) : According

This article is a translation of the thesis (in German) submitted by the author for the degree of Master of Arts in Indology, Classical Archaeology and Ethnology in the Winter Semester 1997/98 at the University of Cologne, Germany.

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to Hesiod[8] Erebus (n., the lightless darkness of depth) and Nyx (f., the night) were born from chaos. Gaea (f., the earth) engendered Uranos (m., the sky) unaided. These are the mythical statements of the primal totality, containing all powers, therefore also all pairs of opposites : chaos and form, darkness and light, the virtual and the manifest, male and female etc.—Hera alone engendered Hephaistos and Typheus, and that "nuptial goddess first appears as an androgyne"[9].—At Labranda, in Caria, they worshipped a bearded Zeus with "six breasts placed triangularly on his chest"[10]. —Hercules changed clothes with Omphale, the queen of the Lydians.[11] —In Cyprus there was a cult of a bearded Aphrodite, called Aphroditos.[12] —About Dionysos, the bisexual god par excellence among the Greek gods, Aeschylos writes the following : "Where have you come from , man-woman? What is your country? What is that garment?"[13] —The Phrygian Great Mother Kybele, for example, and her progeny Adgistis and Mise were androgynous divinities.[14] —Hermaphroditos as well was a bisexual god.[15] —Numerous divinities were called "Father and Mother" in one person. Probably the oldest example comes from Ras Samra.[16] —In different traditions the mythical ancestor of mankind is supposed to be an androgyne : Adam of the Old Testament[17] as well as Tuisto, the first man of the German mythology,[18] were androgynous.—In some traditions the mythical androgynous ancestor is substituted by a pair of twins, for example Yima and Yimagh in Persia.[19] This enumeration could be prolonged. But it imparts already a notion of the multiferous forms of androgynes and to a certain extent the prototypes of androgynous divinities.

In Indian context androgyny is generally associated with Śiva, the "Ardhanārīśvara" (the Lord who is half female). Śiva is the Indian androgynous god par excellence, like the Dionysos of the Greeks and the Bacchus of the Romans. This has historical reasons: Śivaism, besides Śāktism, Tāntrism and Viṣṇuism, has had a tremendous impact on the religious life of Hindu-India over the last fifteen hundred years, and the androgynous aspect of Śiva represents one of the most important factors therein. It was accompanied by secular literature and its iconographic transformation in fine arts—sculpture and painting.[20]

These developments notwithstanding, it must be emphasized that the concept of bisexuality originated already in the Rig-Veda. In other words : Androgyny is an intrinsic feature in Hinduism, from the beginning in the Rig-Veda through the vedo-brāhmaṇic, and the epic and the purāṇic periods ; furthermore until today it is alive in Bhakti—and Śakti-cults.

Although bisexuality constitutes a central theme in Hindu mythology, there are very few systematic investigations of it : In a systematic study Meinhard[21] deals merely with the androgynous Śiva in the Purāṇa-Texts.—Baumann,[22] in his voluminous opus dealing

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with bisexuality in all cultures, shows the development of this phenomenon covering the three periods—the vedo-brāhmaṇic, epic and the purānic. But the ten pages allocated to Indian mythology are too brief to be complete. —O'Flaherty[23] draws up an analytical typology of bisexuality and applies the same to evaluating the sacred and the folkloristic literatures on the three prominent gods Śiva, Prajāpati and Viṣṇu.

The subject-matter of the present work is to expound the androgynous divinities as they appear in the scriptures of the vedo-brāhmaṇic period (*ca.* 1200-400 B.C.) ; it is also attempted to make the alteration of their forms of appearance visible as they emerge from systematic study.

The scriptures of the vedo-brāhmaṇic period consist of the Saṃhitās (Collections of the Vedas—Knowledge, the holy knowledge, the religious knowledge) : Ṛg (ṛc)-, Sāma-, Yajur-and Atharva-Veda, and the Brāhmaṇas (Collections of the valid interpretations), the Āraṇyakas (the forest texts), the Upaniṣads (the philosophical texts) and finally the Sūtras (the text books for rituals), and the Vedāṇgas (the auxiliary sciences). Whilst the Vedas contain the hymns for ritual use, the Brāhmaṇas and the Upaniṣads deal with the theological-philosophical inceptions contained in the Vedas. Although the literature of this period is quite sizable, mainly the Vedas, the Brāhmaṇas and the Upaniṣads are of interest in this context, as the concept of androgyny and the androgynous divinities appear therein. The Mānava-dharma-śāstra does not chronologically belong to this period, but the text is considered here, as it is substantially a part of an older context.

As in other cultures, where androgyny exists, it is ascribed either to divinities responsible for fertility and creation or the gods of higher order as well as to the One God. The Rig-Veda is the primary source of the vedic pantheon and thus of bisexual divinities. One is however confronted with the very difficult task to figure out the androgynous characteristics from the texts : generally they are narrated in the cloak of myths, but mythology, at least in the classical sense, does not exist in the Rig-Veda. Therein "a mythology is in the making" as Winternitz[24] reamrks, or as O'Flaherty[25] elaborates : "the Rig-Veda has no true mythology ; it is written out of a mythology that we can only try to reconstruct from the Rig-Vedic jumbles of paradoxes heaped on paradoxes, tropes heaped on tropes". Additionally the archaic language comes in the way ; the meaning of many a word remains obscure as well as the varying interpretation of thoughts ; moreover the henotheistic invocation of a god, which in a certain context makes him to appear as the One, thus jeopardizing the hierarchical order of the gods.[26] The core of the problems, *i.e.* the ambiguity, is at least partially deliberate : the Ṛṣis emphasize that "the gods love mystery", a phrase, which appears repeatedly in the scriptures.

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The androgynous divinities in the Hindu Mythology, as far as they could be traced inspite of their innate problematic nature, appear in many various forms, like in other cultures (see examples referred to in this chapter). The criterion of classification is the comparability (similarity) of their forms of appearance. Under this viewpoint, they are arranged chapterwise as follows : The primeval parents (Ch. 2), The ancestor of mankind (Ch. 3), The divinities engendering unaided (Ch. 4), The divinities in the shape of Bull-Cow (Ch. 5) and The Only Creator (Ch. 6).

THE PRIMEVAL PARENTS

In many archaic cultures numerous divinities were invoked as father and mother in one person. This is the idea of an androgynous unity, as "a primeval androgyne is often regarded as both parents".[1] Similarly Heaven and Earth, Aditi and Indra were visualized in the vedo-brāhmaṇic mythology. Heaven and Earth fused in one, symbolize a primal totality, which is analogous to primal androgyny. The fusion of male and female represents a primeval unity moulding the metaphysical outlook in general and evoking the highest veneration. The Rig-Vedic Aditi is the great goddess. She, the mother of the gods, is a goddess of fertility. As the heavenly cow she fulfils all wishes of mankind. Indra, the lord of the vedic pantheon and the tutelary god of the Indo-Aryans, is a similarly great god.

Dyāvāpṛthivī, Heaven and Earth

The Heaven (Dyaus) holding a prominent place in the corpus of the Indo-European mythology was once an outstanding divinity. Zeus survived as Lord of the pantheon in Greece as Jupiter did in Rome. In India, where the older gods had to vacate their seats for the newcomers—a perpetual process in the Indian pantheon-, he had to make way for Indra and became a peripheral figure, yet remained present as one half of the androgynous pair, Heaven and Earth. Besides this, the myth of the separation of Heaven and Earth is a motif, the primitive as well as the civilized peoples have in common, it belongs to the mythical dawn of history.[2]

Heaven-Earth (dyāvāpṛthivī, dyāvābhūmi, dyāvākṣāmā, rodasī, kṣoṇī, the last two are translated as the world halves) is the earliest of all the Indian androgynous pairs.[3] It should be kept in mind that the spherical primeval man of Aristophanes is supposed to be a replica of the spherical universe (s. Ch. 1). Conceived as the perfect primal unity, the world halves, originally pressed together in complete darkness, had to be separated in the interest of the earthly creatures. The first cosmogonic act was carried out by many different gods—by Viṣṇu, Varuṇa, the Maruts, Soma, Indra (the main actor), Agni, Sūrya, Viśva-karman and

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Tvaṣṭṛ in the Rig-Veda, by Vasu, Rudra and Āditya in the Śatapatha-Brāhmaṇa, and in the Aitareya-Brāhmaṇa it happend on its own.[4] After the separation the light or the sun was liberated. In the Rig-Veda [RV] it is said of Agni-Vaiśvānāra :

> "Wonderful Agni propped the heaven and earth apart, and covered and concealed the darkness with his light" (RV* 6.8.5).[5]

The standing epithet of the world-halves was devaputra (having gods as sons), and they were considered as divine beings :

> "To give first thought to them, I worship Heaven and Earth..." (RV 1.112.1).

In the references cited above also other gods besides "Sky-Earth" are worshipped, but the first one takes the most distinguished place. For the granting of consolation, help and protection they are invoked as personified "primeval parents" :

> "O Heaven our Father, Earth our guileless Mother (dyaus pitaḥ pṛthivī mātah) bless us" (RV 6.51.5).

And :

> "Widely-capacious Pair, mighty, that never fail, the Father and the Mother (pitā mātā) keep all creatures safe" (RV 1.160.2).

Or they are described as parents being nourishment :

> "Filled full of fatness, compassing all things that be, wide, spacious, dropping meath, beautiful in their form, The Heaven and Earth by Varuṇas decree, unwasting, rich in germs, stand parted each from each" (RV 6.70.1).

Or :

> "Thereto for his bright milk he milked through all the days the partly-coloured Cow and the prolific Bull" (RV 1.160.3).[6]

Or :

> "Prolific Parents, they have made the world of life, and for their brood all round wide immortality" (RV 1.159.2).

In the Śatapatha-Brāhmaṇa [ŚB] they are invoked as "these two heaven and earth, on which this entire universe rests" (ŚB 3.1.3.26).

In connection with the vision of shape and form of the cosmos Heaven-Earth assumes a special position : They are called "the Twin" (ubhāv-ardhau, RV 2.27.15) or are compared

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* If not mentioned otherwise, the quotations from the Rig-Veda are R.T.H.Griffith's translation.

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with "two cups faced to each other" (ṣamīcīne dhiṣaṇe, RV 10.44.8 ; AV 20.94.8), respectively with "the two great meeting bowls" (camvā samīcī, RV 3.55.20) ; furthermore the Earth, together with the Heaven overarching about it, is compared with a tortoise, which indeed resembles a flattened hemisphere (ŚB 7.5.1.1-2).[7]

In the Śtapatha-Brāhmaṇa it is said :

> " 'Be ye in harmony with each other, heaven and earth!' for when heaven and earth are in harmony with each other, then indeed it rains" (ŚB 1.7.216).

That the union of Heaven and Earth causes rain, is narrated more vividly in the Aitareya-Brāhmaṇa [AB] :

> "These two worlds were together, they went apart ; no rain fell ; there was no heat ; the five folks were not in harmony. The gods brought them together, they uniting performed the heavenly marriage (devavivāha = hieros gamos)" (AB 4.27).

This concept of the divine marriage between Heaven and Earth reflects the human union, the man considers himself as heaven and the female herself as the earth. In the Bṛhadāraṇyaka-Upaniṣad [BAU] it is said :

> "Then he comes to her and says : This man (ama) am I ; that woman (sā), thou! That woman, thou ; this man am I! I am the Sāman ; thou, the Ṛg! I am the heaven ; thou, the earth" (BAU 6.4.20).

Beginning with the primeval pair Heaven and Earth which stands as a model for the unity of polar opposites, the seers have conceived numerous pairs possessing generating power :[8] Fire [Agni, m.] and Water [Apa, f.] (ŚB 2.1.1.4), Intellect [Manas, n.] and Speech [Vāc, f.] (ŚB 2.4.1.3), Voice [Svaraḥ, m.] and Breath [Prāṇa, m.] (ŚB 1.4.1.2) etc. About the pair fire and water it is said ; "Water, moreover, is female, and fire is male ; so that he thereby supplies the latter with a productive male" (ŚB 2.1.1.4). Similarly firewoods are considered as partents being kindled by friction. In this connection it is said in the Rig-Veda :

> "Some go before, and others round about thee sit, they in whose friendship thou hast place" (RV 3.9.3).

Baumann points out that the idea of bisexual firewoods together with the myth of primeval parents found its way to Africa.[9]

So far we have seen that in the cosmic act only heaven and earth are separated. In the Taittiriya-Brāhmaṇa [TB], however, three worlds, heaven, earth and air (an androgynous unity) are separated :

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> "These three worlds were united ; the gods separated them into three. The worlds grieved (viraha) that they had been divided in three, and the gods said, 'Let us take the three sorrows from these worlds'. Indra removed their sorrows, and the sorrow which the gods removed from this earth (f. Nomen) entered the whore, the grief from heaven (m.) entered the sinful man or the rogue" (TB 7.10.1 ; 8.10.1 ; JB 1.145 ; 3.72.10).

This myth is peculiar in several ways : The cosmic act of separation is described in an anthropomorphic way, and the three separated parties suffer "love in separation" (viraha) of which there was no mention so far. Its outspoken sexual component, in which "love in separation" (viraha)[10] is transferred upon the whore and the sinful man connotes an exaggerated sexuality. The eunuch (napuṃsaka) on the other hand stands for a castrated sexuality of neither-sex.

Aditi, the heavenly cow

In the vedic religion and society cattle played a very important role : they were the sacrificial animals and stood for one of the worldly riches. One recalls Indra's raids for cows (RV 3.31 ; 10.108). The cow's milk and its products served as offerings at the sacrificial altar—the holiest acts of the vedic religion. At the same time the cow was the source of food and the symbol of motherliness and nourishing welfare. The heaven standing on its four pillars like an animal on its four legs protects and sustains the earth. This concept of heaven is comparable to the cow-shaped goddess Nut and Hathor of the Egyptian mythology.[11] The clouds in the sky with their blessed rain make the earth fertile and nourish all creatures like a mother, a milk-cow, from whose udder milk flows.

In the Rig-Veda this heavenly cow appears in different shapes and under different names[12] : She is the Viśvarūpā (the Omniform, RV 4.33.8), the Sabardughā (the nectar yielding/the wishfulfilling cow of plenty, RV 1.134.4 ; 8.1.10 ; 10.74.4 ; 1.121.5. etc.), the one pouring milk on her own and the Pṛśni (the chequered, the speckled), the mother of the storm gods (Maruts), a mythical cow (RV 2.34.2, 10 ; 7.56.4 etc.). In a hymn, "Extolling the cow" in the Atharva-Veda [AV] heaven and earth are described as food for gods and mankind and the infinite universe :

> "The cow is the sky, the cow the earth...On the cow the gods subsist, on the cow, men also ; the cow became this all, so far as the sun looks abroad" (AV 10.10.30,34).

In the Rig-Veda, the cow appears as Aditi (freedom, unboundness),[13] the guileless one and the one abundant in milk :

> "...do not kill Aditi, the blameless cow" (RV 8.101.15 ; my translation).

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And :

> "O Mitra, O Varuṇa, Aditi, the milk-cow milks for the rite, for folk who bring oblation" (RV 1.153.3).

Here the cosmic cow stands symbolically for Aditi, the infinite vastness of the cosmos ; this is the goddess Aditi,[14] the mother of the gods in heaven (the Ādityas) (RV 10.72.8,9).

In one hymn, "To all Gods" (Viśvedeva) in the Rig-Veda also Aditi, among others, is praised for her magnificence :

> "Aditi is heaven, Aditi is mid-air, Aditi is the Mother and the Sire and Son. Aditi is all Gods, Aditi five-classed men, Aditi all that has been born and shall be born" (RV 1.89.10 ; AV 7.6.1 ; TA 1.13 ; MS 4.14.1).

Aditi is the cosmic origin of heaven and earth. Aditi, the one who is born and as well will be born, is the primeval Goddess, the personification of nature. She is everything, whatever exists between heaven and earth. She is the mistress of time and space. She is Father and Mother in one person, universal : "Her totality is thus symbolized here by her bisexuality".[15]

Amazingly, this Aditi appears also with two heads. A cow needed for Soma sacrifice (soma-krayaṇī), representing the goddess at the sacrificial altar, is addressed thus :

> "Thou art the double-headed (ubhayataḥśirṣiṇī) Aditi" (TS 1.2.4.2 ; VS 4.19 ; MS 1.2, 4 ; KS 2.5).

It is explained as follows :

> " 'Thou art Aditi, double-headed', he says. In that to Aditi belong the opening and the concluding oblations of the sacrifices, therefore does he say that" (TS 6.1.7.5).

In the Śatapatha-Brāhmaṇa, the soma-cow Aditi, identified with Vāc (Speech), is again referred to as double-headed :

> " 'Thou art Aditi, the double-headed'—inasmuch as, through her (Vāc), he speaks the right thing wrongly and puts last what comes first, and first what comes last, therefore she is double-headed : that is why he says, thou art Aditi, the double-headed" (ŚB 3.2.4.16).

The words "facing well ahead" and "facing well behind", with which the soma-cow Aditi, standing corporeally at the sacrificial altar, is evoked for her blessing, suggests her expansion in heaven and the cardinal directions, which is of importance for the performance of the sacrificial act.[16]

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It is obvious that all these vague allusions do not explain, why the soma-cow Aditi is double-headed. A scrutiny of the relevant literature shows that in Indian tradition a cow or any other mythical creature having two heads facing ahead and facing behind does not exist. Weyersberg et al link the soma-cow to the double-headed creatures of the Egyptian, Near-Eastern and Greek mythology supposed to be androgynes and thus suggesting an inter-cultural influence. A careful reading of the above mentioned literature however shows that these attempts at explanation are unsatisfactory : Weyersberg et al[17] connect the double-headedness of Aditi with the cardinal directions (ahead and behind). But they ignore that it is said explicitly : He (the priest) utters the right wrong and the first last. This indicates that the double-headedness of Aditi stands at least for ambivalence, the construction of opposites however poses a "coincidentia oppositorum".[18] When the antipodes feminine and masculine appear integrated in one figure, it states an exemplary case of "coincidentia oppositorum". Where "part" and "counterpart" simultaneously co-exist, there perfection has materialized.

In a theogonic song in the Rig-Veda, Aditi gives birth to the cosmic space, the earth, Dakṣa (competent, skilful) and the eight sons (Ādityas, the sons of Aditi) in crouching position :

> "In the first age of the gods, existence was born from non-existence. After this the quarters of the sky were born from her who crouched with legs spread. The earth was born from her who crouched with legs spread, and from the earth the quarters of the sky were born. From Aditi, Dakṣa was born, and from Dakṣa Aditi was born. For Aditi was born as your daughter, O Dskṣa, and after her were born the blessed gods, the kinsmen of immortality" (RV 10.72.3,4,5 ; trans. W.D.O' Flaherty).

The word "uttānpad" is an epithet of Aditi which according to Geldner means : "with raised feet or with the lower legs drawn below the thigh, at any rate so, that the sole of the feet turned up".[19] But we are less interested in the posture of Aditi at her delivery than in the birth of Dakṣa from Aditi and hers from Dakṣa as his daughter. That Dakṣa was born from Aditi is found in another passage in the Rig-Veda :

> "Not Being, Being in the highest heaven, in Aditi's bosom and in Dakṣa's birthplace" (RV 10.5.7)

This mutual bearing is at first sight a paradox, but it is more than that : the premordial goddess Aditi, representing the principle of creation, is capable of giving birth "unaided" —she is bisexual like Hera in the Greek mythology (*cf.* Ch. 1). In the same way Dakṣa representing the principle of creation, is an androgynous god.

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That Aditi, the multiform, yet appearing predominantly as female, gives birth to Dakṣa, is only feasible, because she is endowed with female and male potency meaning she is simultaneously bisexual. As the masculine Dakṣa brings forth Aditi, he is likewise simultaneously bisexual. Sāyaṇa remarks that Nirukta 11-23 states that by the dharma of the gods, two births can be mutually productive of another.[20]

In this sequence Aditi is the primary begetter and bearer ; she bestows her bisexuality on Dakṣa. When Aditi is called the daughter of Dakṣa, this chronology is however rendered invalid. Dakṣa poses simultaneously as her father and son *i.e.* the limitations of sex and generation are interchangeable. Simultaneity and alternation overlap ; it is inextricable.

Indra, the Lord of Heaven

Indra depriving his father Dyaus of his rights, rising to the lordship of heaven and destroying his enemies with a thunderbolt (Vajra) is the vedic tutelary god of the Indo-Aryans. The highly lauded destroyer of Vṛtra enjoyed to get intoxicated with Soma, the drink of the gods. He is strong and virile like the Bull-Asura. In the Rig-Veda the greatness of an Almighty is ascribed to him. In one of the laudatory hymns Indra is adressed as Father and Mother and begged for his/her grace :

> "For you have become our father, Vasu, (and) our mother, Śatakratu ; therefore we beg you for your grace" (RV 8.98.11 ; my translation).

By addressing Indra as Father and Mother in one person his bisexual totality is established.

Indra is an erotic god and also a lecher. His spouse is Indrāṇī, "the dame with the lovely hands and arms, with broad hair-plaits and ample hips" (RV 10.86.8) and his marriage (hieros gamos) with her is a fulfilled one. Nevertheless he seeks amorous adventures. To satisfy his desires he employs the art of metamorphosis ; that he, transforming himself can take any shape, is ascribed to him in the Rig-Veda :

> "Maghavan weareth every shape at pleasure, effecting magic changes in his body" (RV 3.53.8).

Indra's amorous adventures are already hinted at in the Vedas, where his transformation into a female stands in the foreground. This is how it is alluded to in the Rig-Veda :

> "Thou, very wise, wast Menā., Vṛṣaṇaśvas child..." (RV 1.51.13).

In this fragment of a myth, Indra transforms himself into Menā (f., a woman, also a female beast of any type, can also be a Nomen proprium), a female, for the sake of Vṛṣaṇaśvas (a mixed creature, which is half bull and half horse, or N. pr.).

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In the Maitrāyaṇīya-Saṃhitā [MS] however the myth is repeated in a somewhat elaborated version :

> "The woman, who has the shape of a man, is grasped by Nirṛti. The man, who has the shape of a woman, is grasped by Nirṛti...when at the time Indra was Menā of Vṛṣaṇaśva, then Nirṛti, the evil, grasped him. The evil that he drove away, became a castrate" (MS 2.5.2 ; my translation).

The Rig-Vedic version of the myth is repeated here almost word by word ; the elaboration concerns the disapproval of the transformation of sex and its consequence : one is grasped by the evil and becomes a castrate. As the myth is nothing more than an allusion the interpretation is difficult—the attempts at explanation by Sāyaṇa, Deppert and in the Pañcaviṃśa-Brāhmaṇa [PB][21] are more confusing than clarifying. Whatsoever : Indra transforms himself into a female creature (Menā) and returns under certain circumstances to his original form. Thus Indra is an alternating androgyne.

In the Kāṭhaka-Saṃhitā [KS] it is said that Indra seduced a certain demoness Vilistengā by employing the ruse of metamorphosis :

> "Indra coveted the demoness Vilistengā. He went among the Asura.[22] He became a woman among women, a man among women, a man among men. He believed to have been grasped by Nirṛti. He (the priest) beheld this castrated animal as a sacrifice devoted to Indra and Nirṛti. In whatever form as a castrate he went, he sacrificed such an animal" (KS 13.5 ; my translation).

The text of this myth is lucid : Indra's transformation into the female Vilistengā and his re-transformation served the purpose of devoting himself to his amorous adventure conveniently. This however turned out to be his downfall—he lost his place among the gods. Also in this myth, Indra is an alternating androgyne.

In a magic formula in the Atharva-Veda for winning the love of a male by a female with the help of a plant the priest falls back upon this myth :

> "Wherewith the Āsurī put down Indra from among the gods, therewith put I thee down, that I may be very dear to thee" (AV 7.38.2).

In this account it is the Āsurī Vilistengā,[23] who seduces and submits Indra, and that subsequently turns out to be his downfall, for he loses his place among the gods.

In the vedo-brāhmaṇic religion the sacrificial ceremony holds the central position. Therein not only an offering to the gods, but even a gift to a brahmin priest is ceremonially consecrated and occasionally considered equal to a god,[24] implying that the profane takes on the quality of the sacred. A mark of this potential equalization, as manifested in the

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divine attribute of bisexuality, is however accorded to three prominent gods in the scriptures : Indra, Tvaṣṭṛ and Agni. While Indra is being dealt with below, Tvaṣṭṛ and Agni are reserved for chapter 5.

In one hymn in the Atharva-Veda a draft-ox, prepared as a gift, is equated with Indra, praised and presented as a milk-cow :

> "The draft-ox (is) Indra...The draft-ox (anaḍvān) yields milk (duh) in the world of the well-done ; the purifying one fills up from in the front ; Parjanya (is) his streams ; the Maruts his udder, the sacrificial gift the milking of him" (AV 4.11.2.4).

The draft-ox Indra is the milk-cow fed by Vāyu (Wind-god). The milk serving as a libation, which flows (Parjanya)[25] from her udder (the Maruts), is milked by the priests. The draft-ox Indra, the male god, is simultaneously a milk-cow, thus bisexual.

THE ANCESTOR OF MANKIND

In many archiac cultures the mythical ancestor of mankind is thought to be bisexual. In the vedo-brāhmaṇic mythology Manu and to a certain extent also the twin-pair Yama-Yamī are considered as the primal ancestors of mankind.

Manu, the first man

In an archetypal sense Manu stands for "Man". Manu was, like Yama,—the first man to die—, a son of Vivasvat (RV 8.52.1) and the first man, offering a sacrifice to the gods (RV 10.63.7). He was also the first man who created a woman from one of his ribs named Parśu (rib).[1] She, Parśu, gave birth to twenty children "at a birth", so that the propagation of mankind could be secured. In "the Vṛṣakāpi-hymn" of the Rig-Veda it runs as follows :

> "Daughter of Manu, Parśu bare a score of children at a birth. Her portion verily was bliss although her burden caused her grief" (RV 10.86.23).

Manu created Parśu out of his ribs, but unaided. He is thus a primordial androgyne. Parśu, the daughter, with whom Manu enters into an incestuous relation, and who ensures the progenity, is an anthropomorphic figure, experiencing labour-pains like a mortal woman ; on the other hand she gives birth to twenty children at a time and that is "divine".—The creation of Parśu offers a surprising parellel to that of Eve in the Old Testament : God created Eve in the same way out of Adm's rib, and created Adam in his image,[2] thus both—God and Adam—are androgynes. In many later scriptures, Manu likewise is described as an androgyne.

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In the deluge myth of the Śatapatha-Brāhmaṇa, it is reported that after the ebbing of the flood Manu was the only surviver. He desired progeny. To accomplish this he prayed, practised ascetism and performed a Pāka-sacrifice consisting of clarified butter, sour milk and curds to the waters. After one year a woman Ida, a personification of the sacrificial gift, came into being. Afterwards she went to Manu, presented herself and with her he secured the progression of mankind :

> "Manu said to her, 'Who art thou?'. 'Thy daughter', she replied. 'How, the illustrious one?', he asked. She replied, 'Those offerings (of) clarified butter, sour-milk, whey and curds, which thou madest in waters, with them thou hast begotten me...'. Through her he generated this race of Manu, which is the race of Manu..." (ŚB 1.8.1.1-10).

Manu is the initiator of the sacrificial rituals. In a way the ritual acts are a repetition of the cosmogony. The offerings, consisting of food, which he places in the waters, could symbolize Manu's semen. Summarily it can be said : Manu begets his daughter unaided, and impregnating her he takes care of the propagation of mankind. He is a male androgyne.

Yama-Yamī, the twin-pair

Yama was the son of Vivasvat (Sun) (RV 9.113.8 ; 10.14.1), and his mother, the spouse, was the daughter of Tvaṣṭṛ (RV 10.17.1). According to one version he, as the first deceased, discovered the path to the manes (pitṛ) (RV 10.14.1) and became their lord (RV 10.14.1, 4.7.11, 15 ; 10.16.9 ; 1.35.6). According to another version he was the first man born in the form of a primordial god who with his (female) companion Yamī as the first human pair created the human race (RV 1.66.8 ; 7.33.9,12 ; 1.83.5 ; MS 1p.81.2 ; KS 1p.71.19). This legend presumably goes back to the Indo-Iranian prehistory : According to the Avestan tradition the twins Yima and Yimag were the primeval parents of mankind.[3] In Hindu view, however, incest among brother and sister was taboo. Perhaps that is why Yama even today maintains his position as the god of the netherworld.

In a 'conversation' (in medias res) between Yama and Yamī in a balled in the Rig-Veda, Yamī tries to persuade Yama, her brother, to enter into a marital relationship, so as to secure progeny, a desire, Yama, rejects for reasons of morality. Yamī, however, refers to Tvaṣṭṛ, who had begotten both of them in the womb of their mother as man and woman, and in heaven and earth they were brother and sister, as well as the ancestors of all the creatures resembling them :

> "[Yamī :] 'A man of foresight should receive a grandson from the father, thinking of what lies ahead on earth...the god Tvaṣṭṛ, creator and impeller, shaper of all

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forms, made us man and wife even when we were still in the womb...we twins are related in the same way as sky and earth'..." (RV 10.10.1,5,9 ; trans. W.D.O'Flaherty).

Though Yama and Yamī are brother and sister as a pair of twins, they were nevertheless begotten by their progenitor Tvaṣṭṛ as man and wife, so that they could enter into a marital relationship. Thus the implicit intention of the creator would be realized. Moreover it is said that their relationship is like that of heaven and earth (*cf.* Dyāvāprthivī), appearing as siblings and father and mother of all creatures. This myth is sort of a speculation on a potential but abortive anthropogony[4] and contains a variant of androgyny, as "twins, in a way, are also just two halves of a single mythical person, the splitting of which brought forth the two corporeal halves"[5] (*cf.* twins in the introduction).

DIVINITIES GIVING BIRTH UNAIDED

In the Greek mythology Hera gave birth to Hephaistos and Typheus unaided. This is an extraordinary distinction for a goddess. In the earlier chapter we have encountered similar engendering, namely of Aditi and Dakṣa. In this chapter we shall deal with the motherhood of Iḷā. The myth describing the birth of Purūravas as the son of Iḷā is of special interest, as here a goddess gives birth to a human child.

Iḷā, who brings delight

In the Rig-Veda Iḷā is mentioned together with Sarasvatī and Bhārati or Mahī as a goddess, who brings delight (RV 1.3.9 ; 1.142.9 ; 1.188.8 etc.). She is the teacher of the sons of men (RV 1.31.11), the mother of the herds of cattles (RV 5.41.19), and her place is the centre of the earth (RV 3.29.4).

In the famous ballad (Saṃvāda hymn) "Purūravas and Urvaśi" in the Rig-Veda Purūravas is addressed by an invisible heavenly voice as Iḷā 's son :

> "This is what these gods say to you, son of Iḷā ; since you are a kinsman of death, your descendants will sacrifice to the gods with the oblation, but you shall taste joy in heaven" (RV 10.95.18 ; trans. W.D.O'Flaherty ; ŚB 11.5.1).

Iḷā, the goddess, gives birth to a mortal son, Purūravas, a human child, as the gods declare. He falls in love with Urvaśi, a water nymph, begets a son with her and leaves the earth to live with her in heaven.

Though Iḷā is not a magna mater, she nevertheless is the navel of the earth and gives birth to a son unaided - she is therefore a female androgyne. In Mahābhārata [Mbh] she

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appears as an androgynous primordial goddess, the father and mother of Purūravas in one person (Mbh 1.75.18,19).

DIVINITIES IN THE SHAPE OF BULL-COW

Cattle played an important role not only in the vedo-brāhmaṇic myths, but also in everyday life of that time : as sacrificial animals, worldly wealth and the source of nourishment. This position of cattle is still alive in the sacral sphere, though in a somewhat modified way : Nandin, the vehicle (vāhana) of Śiva, as the symbol of restrained generative power and Gomātā, the cow-mother as a symbol of holiness as such (*cf.* Aditi). Basically, the bull, because of his generative power and wildness, stands for manliness and the cow for motherliness and nourishing care. In the Rig-Vedic tradition the ésteem of this mythical bull and the mythical cow was so high, they were identified with heaven and earth. As in India, also in some other archaic cultures bull and cow were accorded divine rank.[1]

In the Rig-Veda a number of gods were put on an equal footing with the bull,[2] but only a few were credited with the double potency, "Bull-Cow" : Tvaṣṭṛ, Agni, Soma, and Parjanya. Moreover, these divinities were rewarded with the appellation of Bull-Asura (Vṛṣan-asura) and they stand symbolically for the sun or the heaven (RV 1.131.1 ; 1.122.1).

Tvaṣṭṛ,[3] the Lord of all forms

Tvaṣṭṛ in the Rig-Veda is the fashioner of all forms and the archetype of all forms. He is the personification of all technical skills and in so far analogous to the divinities of antiquity like the Egyptian Pta, Babylonian Mummu, Phoenician Chusor, Hephaistos of the Greeks etc. Tvaṣṭṛ, "the earliest born god", is also a god of creation. He can take on all forms and also shape all forms. He is the maker of the sky and the earth and forms the embryos in the womb of women. Triśiras (also known as Viśvarūpa), a creature with three heads, is his son and Saraṇyū, whom he gave to Vivasvat as a spouse, is his daughter. Sometimes he steps down and Indra and Varuṇa take over (RV 10.142.5 ; 3.38.9).[4]

In an obscure cosmogonic hymn in the Rig-Veda, Tvaṣṭṛ is denoted as the primeval god, being acquainted with the mysteries of the origin of the universe. Identified with the omniform Bull, he appears as bull and cow simultaneously, as well as the creator generating the universe, who unifies the principles of creation in himself :

> "Even as he mounted up they all adorned him : self-luminous (svarocih) he travels clothed in splendour. That is the Bull's, the Asura's mighty figure : he, Omniform (Viśvarūpa), hath reached the eternal waters (4). First the more ancient Bull engendered offspring...(5). That same companionship of her, the Milch-cow, here with the strong Bull's divers forms established" (RV 3.38.4,5,7).

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Tvaṣṭṛ as the sun or the sky (here rather the wandering sun), is at the same time the bull Asura, the Omniform. The first engendering god giving birth out of himself and unifying the creative power in himself as bull and cow, is androgynous.

In one of the Vivśedeva-Hymns—again an obscure one—Tvaṣṭṛ, the creator, is once more identified with the Bull Asura, the Omniform, and described as having three bellies, three udders and three faces :

> "The Bull who wears all shapes, the triple-breasted, three-uddered, with a brood in many places, ruleth majestic with his triple aspect, the Bull, the everlasting One's impregner" (RV 3.56.3).

The 'omniform' Bull appears here in three-fold shape, one for each of the three earths (*cf.* Mahī in the verse 2), with one belly, udder and face.[5] He is the spender of semen and the father of multiferous descendants. In our context it is important to keep in mind that Tvaṣṭṛ, the omniform Bull-Cow, also possesses an udder. Hence he is bull and cow at the same time, subsequently a divinity, a simultaneous androgyne.

In one hymn in the Atharva-Veda which accompanies the donation of a bull, the same is equated with various gods and also with Tvaṣṭṛ :

> "The bright bull of a thousand, rich in milk, bearing all forms in his bellies...(1). A male (puṃs), yet pregnant, big (sthavira), rich in milk, the bull bears a trunk (kavandha) of goods (vasu)...(2)" (AV 9.4.1,3 ; TS 2.3.9 ; KS 13.9 ; MS 2.5.10).

The male bull, like Tvaṣṭṛ the fashioner of all forms, carries (in the sense of "being pregnant") all forms in his belly. He is male, yet pregnant like a cow. Giving milk copiously he is a bull and a cow at the same time, *i.e.* simultaneous androgyne. The identification of the bull with Tvaṣṭṛ goes back to the Rig-Veda where he is often called a bull. As a creator he is the fashioner of all forms and bull and cow at the same time.

Agni, the God of Fire

Agni, the fire, is one of the most ancient and holiest ritual components of the old Persians as well as the Indo-Aryans. The standing of the vedo-brāhmaṇic Agni, because of its relation to the sacrifical rites, is so high, that it is acknowledged as the priest of the gods and the god of the priests. Besides Indra and Sūrya (the sun god) his position is among the three highest vedo-brāhmaṇic divinities. In three-fold form Agni, the god, represents the fire : as sun, lightning and sacrificial fire. He is the lover of maidens and the matrons' Lord (RV 1.66.8). Agni is the first-born of the Holy-Order at the onset of life (RV 10.5.7). He is Asura (Heaven), identified with the bull Omniform :

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"Agni the Bull, the manly, hath been sprinkled with oil upon his back, by law eternal. He who gives vital power goes on unswerving, Pṛśni the bull hath milked the white pure udder" (RV 4.3.10).

The manly Agni, the bull, anointed with creamy milk at the sacrificial ritual, becomes the bull of heaven as his reward. He is then like the Pṛśni-cow, the storm-cloud, from whom he is born, and milks his own cloud-udder—this is Agni's transformation into rain (RV 10.91.6). Agni is here his own creator and bull and cow at the same time, thus a bisexual divinity.

Elsewhere in the Rig-Veda Agni is described as Bull and Cow in one person :

"Not being, Being in the highest heaven, in Aditi's bosom and in Dakṣa's birthplace. Is Agni, our first-born of the Holy Order, the Milch-cow and the Bull in the life's beginning" (RV 10.5.7).

Dakṣa's birth in the womb of Aditi signalizes the beginning of time and the end of the primordial chaos of the world. Agni, the first-born of the Holy Order, is hence identical with Dakṣa and as bull and cow in one person (heaven-earth = Dakṣa/Agni and Aditi) bisexual from of his birth onward.

In a "song of praise to Agni" in the Rig-Veda, in which also his mythical birth is descibed, he is identical with his father and father-mother and son in one person :

"Excellent, he was made by thought. The germs of beings have I gained, Yea, and the Sire of active strength" (RV 3.27.9).

Agni, the chosen one, conceived himself as the germ of all beings. According to Sāyaṇa this means : svātmānam eva garbharūpayatā ādhade. This germ is again identical with Dakṣa's father, the primal creator of the world, and thus Agni is his child. This implies : Agni is father, mother and child at the same time, thus an androgynous primeval god.

In another passage in the Rig-Veda Agni is presented as the engenderer of himself, and Bull and Cow in one person :

"Wonderful, rich in nourishment, he dwells in food ; next, in the seven auspicious Mothers is his home. Thirdly, that they might drain the treasures of the Bull, the maidens brought forth him for whom the ten provide" (RV 1.141.2).

These verses describe the different births of Agni and the gestation periods of "Agni tānunapāt" (Agni is his own son).[6] Agni who impregnates his own mother becomes the fruit of her womb and that in a seven-fold form (seven forms of appearence) : Accordingly Agni begets himself out of himself, and he is mother as well as son. The ten nourishing women are those fingers, who initiate his making, *i.e.* his own ten fingers (RV 1.95.2 ;

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3.23.3). These stand metaphorically for the maidens, Agni, the bull, milks himself with. So Agni is bull and cow in one person, bisexual.

In one hymn in the Atharva-Veda the offering of the Brāhmaṇa-rice-dish (brāhmaudana) is equated with Angi—this follows from the stanzas preceding those cited below :

> "The offering, yielding milk (duh), constantly full (prapīna) ; a male (puṃs) milk-cow, seat of wealth, immortality through offspring, and a long life-time—and may we sit by thee with abundance (pl.) of wealth. Thou art a heaven-going bull..." (AV 11.1.34, 35 ; TB 1.5.5).

The Brāhmaṇa-rice-dish, which fulfils many desires of the sacrificer, a male milk-cow (a paradox), is masculine and feminine at the same time, thus androgynous. The bull Agni, rising to heaven, is also a milk-cow, thus bull and cow at the same time, an image of bi-sexuality.

Soma, the god of heavenly drink

Soma is the name of a creeper (Sacrostema Vilminalis or Asclepias Acida) growing in mountainous and riverside landscapes as well as of the juice extracted from it. The same, fermented or mixed with water or milk or with both, is a narcotic and hallucinogen. At the Soma sacrificial ceremony it was offered to the gods as a sacrifice—in so far comparable to the Avestan Haoma. Soma was also the sacred drink of the Brāhmiṇs, who consuming it gained inspiration for their poetical creativity. Probably this widening of consciousness was responsible for the fact that the Soma-plant and Soma-drink were personified as the god Soma.[7] Dionysos, the Greek god of wine, offers a striking parallel.[8]

Soma was supposed to be of heavenly origin ; he was fetched from the highest heaven by an eagle and a hawk. He was the youngest son of Aditi and he himself was the creator of the sky and the earth and of the gods Agni, Sūrya, Indra and Viṣṇu. In the Rig-Veda, on account of his strength, he was compared with the buffalo and the race-horse, and equated with the bull. In the latest phase of the Rig-Veda god Soma was identified with the moon, ending up as the moon god in the Purāṇas. Already during the late-vedic and the brāhmaṇic period the soma-plant was in short supply (ŚB 4.5.101-6).

In the Rig-Veda the whole of the Maṇḍala IX and six more hymns are dedicated to Soma. In some passages he is described as a bull and a cow at the same time. In the Rig-Veda Soma appears twice as the bull residing in the mountain being milked :

> "The steer who sees afar hath risen above the sky...High in the vault of heaven, unceasing, honey-tongued, the Loving Ones drain out the mountain-hunting Steer,— The drop that hath grown great in waters, in the lake, meath-rich, in the stream's wave and in the cleansing sieve" (RV 9.85.9,10).

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The mountain-dwelling Steer could mean the Soma-plant growing in the mountains or the sun, arising from behind the mountain and rising in the sky. The sweet Soma-juice, which is milked by the friends, the Maruts from the udder of the steer, streams ceaselessly like milk from the cow. As Steer and Cow Soma is a bisexual god.

In another place it is said :

> "They drain the stalk, the Steer who dwells on mountains, even as a Bull who decks him on the upland" (RV 9.95.4).

The mountain-dwelling Steer here is the Soma-plant. The Steer resembling a buffalo has a womb (udder) and is milked (pressed out) by the Soma-priests. The god Soma is a steer and a cow in one person, and is therefore bisexual.

In two other hymns in the Rig-Veda Soma is presented as a bull, who lets himself be milked :

> "The Bull (Soma) hath yielded for the Bull (Indra) the milk of heaven : the Son of Aditi can never be deceived..." (RV 10.11.1).

Here again appears the image of the pressing out of Soma : If the bull Soma allows to milk his heavenly milk (rain), then it means that the bull Soma is at the same time a cow. In another hymn, addressed to Soma, he is a cloud which is milked :

> "Butter and milk are drawn from the animated cloud, thence Amrit is produced, centre of sacrifice" (RV 9.74.4).

Soma is here a lively cloud from which butter and milk are milked ; the same symbolizes also the birth of Soma, the drink. Like Parjanya, the cloud-god (s. Parjanya), Soma is also a steer and cow at the same time, thus a simultaneously bisexual god.

In two hymns to Indra, the highest god of the vedic pantheon, Soma is described as an udder for which Indra is greedy :

> "Desiring food he came unto his mother, and on her breast beheld the pungent Soma..." (RV 3.48.3).

And :

> "How, what priests sacrifice hath he made mighty, rejoicing in the Soma and its fountain?..." (RV 4.23.1).

Soma is the udder Indra immediately looked for after his birth and which pleased him, the udder is the soma-drink. The Soma (masculine) is a mother-cow. Thus Soma is an androgynous god.

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In a Soma-hymn in the Rig-Veda, Soma is described as his own son like Agni (*cf.* Agni) :

> "He, Pavamāna, Self-producted (Tānunapāt), speeds onward sharpening his horns: he glitters through the firmament" (RV 9.5.2).

The bull, sharpening his horns and streaming resplendently through the air, is his own son. With these characteristics Soma is again an androgynous god.

Parjanya, the god of the rain-cloud

Parjanya is a vedic god, who represents rain and also the rain-cloud. He is an Āditya and a son of Dakṣa. He takes over Indra's function as the god of rain, and because of this he is sometimes equated with him.[9] He appears as Bull-Asura, who as rain stimulates vegetation and makes the cow, the mare and the woman fertile.

In one of the hymns of the Rig-Veda, the poet entreats of Parjanya, who is addressed as bull and Father-Asura, the fecundity of heaven and earth :

> "...The Bull, loud roaring, swift to send his bounty, lays in the plants the seed for germination...Come hither with this thunder while thou pourest the waters down, our heavenly Lord and Father. Saturate both the earth and heaven with fatness..." (RV 5.83.1,6,8).

This rain-god who comes with thunder, pouring his waterlike semen as germs into the plants, is presented in the Rig-Veda as a bull with an udder :

> "The movements of the gliding wind come hither : like cows, the springs are filled to overflowing. Born in the station e'en of the lofty heaven the Bull hath loudly bellowed in this region" (RV 7.36.3).

Here the monsoon, the Indian rainy season, is announced by the preceding storm. The idea of a steer with an udder is indeed a paradox, but that exactly establishes his bisexual nature.

In a hymn dedicated to Parjanya, he is also compared with a barren cow :

> "Speak forth three words, the words which light precedeth, which milk this udder, that produceth nectar...Now he is sterile (starira), now begeteth offspring, even as he willeth doth he change his figure" (RV 7.101.1,3).

The three voices (lightning, thunder and rain), a cosmic metapher, milk the sweet water from the udder of the heavenly bull. The rain-udder being drained leaves Parjanya like a barren cow. He can fertilize, be milked and become dry, "he can change his figure as he willeth", therefore is endowed with male and female potency.

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Pṛśni, the chequered cow

Pṛśni (variegated, speckled, spotted) is an epithet for many-coloured cows. In the Vedas it is the name of a mythical cow, personifying the vibrant clouds in the sky and also the earth. She stands for abundance, as she spends milk and rain (*cf.* Aditi in chapter 2). As goddess Pṛśni she is the Pṛśnimātṛ, the mother of the Maruts, the storm-gods.

In one hymn to Agni in the Rig-Veda she figures like Agni (*cf.* Agni) as bull and cow at the same time :

> "...He who gives vital power goes on unswerving, Pṛśni the Bull hath milked the pure white udder" (RV 4.3.10).

Here the Pṛśni-cow is identical with Agni—she is a bull at the same time, hence simultaneously androgynous.

Elsewhere in one hymn to the Maruts in the Rig-Veda the Pṛśni-cow is presented as Bull-Cow :

> "They who are Sons of the rain-pouring Rudra, whom the long-lasting one had power to foster : The Mighty Ones whose germ great Mother Pṛśni is known to have received for man's advantage" (RV 6.66.3).

The Maruts, who come forth from the thundercloud, are the sons of Rudra as well as of Pṛśni. She, Pṛśni, who conceives the Maruts in her womb, is male and female, bull and cow. On this Geldner comments : "If one wants to hold on to the syntax of the sentence, the Pṛśnī-cow would then be a male and female creature, subsequently the mythical cow (RV 3.38.5,7 ; 3.56.3 ; 4.3.10 ; 10.5.7)...The male half of this bisexual creature would then identify with Rudra, the father of the Maruts (RV 2.34.2), foreshadowing the androgynous Śiva".[10]

THE ONLY CREATOR

In consonance with other archaic cultures the myths illustrating the dark origion of life hold a prominent place within the Hindu mythology. It is these myths that provide the essential source of the concept of androgyny ; "as an exemplary expression of the creative power, bisexuality is ranged among the glories of divinity".[1] The Rig-Veda contains various speculations on cosmogony. As demonstrated in the second chapter the demiurges accomplish the separation of heaven and earth and Aditi accomplishes the briths of the gods. In this chapter, the other cosmogonic myths will be investigated, presenting an only creator (ekam) under the names of Hiraṇyagarbha, Puruṣa, Prajāpati and Ātman, as the "Urgrund" of all existence.

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Hiraṇyagarbha, The golden Germ

A central motif of the world-parents-myth is the egg-cosmogony : The world-egg splitting into two halves forms earth and heaven. This motif holding an outstanding position in many high civilizations regards the world-egg as an androgynous unity.[2] In Hindu mythology this concept appears already in the Rig-Veda with the creator, the origin of everything, being born as the golden Germ in the primordial waters. This golden Germ foreshadows the evolution of the later egg-cosmogony : the germ being conceived in the waters becomes the golden egg and latter releases the creation.

In one of the creation hymns in the Rig-Veda the Ṛṣi—the visionary—asks the question after the still unknown primal god and creator "Ka" ('Deus ignotus' according to Max Müller) :

> "In the beginning rose Hiraṇyagarbha, born Only Lord of all created beings. He fixed and holdeth up this earth and heaven...(1)...What time the mighty waters came, containing the universal germ, producing Agni. Thence sprang the Gods' one spirit into being (7)... Ne'er may he harm us who is earth's Begetter, nor he whose laws are sure, the heaven's Creator, he who brought forth the great and lucid waters (9)...Prajāpati! thou only comprehendest all these created things, and none beside thee...(10) (RV 10.121.1,7,10 ; 10.82.5,6).

Hiraṇyagarbha is a compound of two meaningful words : "hiraṇya is gold and garbha is womb, embryo, semen or child"[3] and simultaneously the name of the creator. He is the image of the sun shining like gold and similar to an egg : "the name metaphorically associates creation with the sun or with the light of the sun, and by implication with the primordial waters from which the sun appears to rise."[4] This golden Germ, "the first metamorphosis of the primeval God transforming himself into the universe and the highest immanent God born out of it",[5] is Prajāpati, the master of creatures, as the last stanza implicates. This Prajāpati is the later Brahman/Brahmā. This hymn reveals the paradox of the creator's birth. According to verse 7 he seems to emerge from the primordial waters, whereas in verse 9 the waters are generated by him. That is the starting point for later speculation.

In Atharva-Veda it is said :

> "The waters, generating a young (vatsa), set in motion (sam-īray) in the beginning an embryo, and of that, when born, the foetal envelop (ulba) was of gold..." (AV 4.2.8 ; 10.7.28).

And it says in the Śatapatha-Brāhmaṇa :

> "Verily, in the beginning this (universe) was water, nothing but a sea of water. The waters desired, 'How can we be reproduced?' They toiled and performed fervid

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devotions, when they were becoming heated, a golden egg was produced...In a year's time a man, this Prajāpati, was produced therefrom...He broke open this golden egg..."(ŚB 11.1.6.1,2 ; 6.1.1.10).

In both the quotations the reasoning is distinct : The primordial waters generate the golden egg, and the golden egg generates Prajāpati who as a fetus swam in the amniotic fluid for one year—simultaneously creator and creature. As mentioned above the process of creation is circular in the first quotation and linear in the second and third.

In the Chāndogya-Upaniṣad [ChU] a consistent egg cosmology evolves, explaining the origin of the egg as well as that of the universe out of the egg :

"In the beginning this was non-existent. It became existent, it grew. It turned into an egg. The egg lay for the time of a year. The egg broke open. The two halves were one of silver, the other of gold. (1) The silver one became this earth, the golden one the sky, the thick membrane (of the white) the mountains, the thin membrance (of the yoke) the mist with the clouds, the small veins the rivers, the fluid the sea. (2) And what was borne from it that was Āditya, the sun. When he was born shouts of hurrah arose, and all beings arose, and all things which they desired. Therefore whenever the sun rises and sets, shouts of hurrah arise, and all things which they desire. (3) If anyone knowing this meditates on the sun as Brahman, pleasant shouts will approach him and will continue, yea, they will continue (4)" (ChU 3.19 ; trans. M. Müeller).

This song of creation connects two of the above mentioned Rig-Vedic myths : The golden Germ in the primordial waters (RV 10.121, s. above) and the vital energy (ekam) included in the vacuous chaos willing the golden Germ and creation into existence, (RV 10.129). Moreover it states that the non-being is the being generating the golden Germ, the egg and finally creation ; it stands to reason that the golden Germ represents the first thought. The two halves are Mother earth and Father heaven, the primordial androgynous unity. The egg yolk swimming in the amniotic fluid becomes the sun, and this source of life is the venerable Brahman, incorporating the principle of androgyny as such.

The primeval god named Svayambhū (the self existent) in the Manu-Smṛti [Manu], is the supreme personified principle of creation, like Puruṣa, Prajāpati and Brahmā. The following myth reveals lucidly the relation between creator, primeval waters, semen, golden egg and creation :

"This (universe) existed in the shape of Darkness, unperceived, destitute of distinctive marks, unattainable by reasoning, unknowable, wholly immersed, as it were, in deep sleep. (5) Then the divine Self-existent (Svayambhū himself)

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indiscernible, (but) making (all) this, the great elements and the rest, discernible, appeared with irrestible (creative) power, dispelling the darkness. (6) He, desiring to produce being of many kinds from his own body, first with a thought created the waters, and placed his seed in them. (8) That (seed) became a golden egg, in brilliancy equal to the sun ; in that (egg) he himself was born as Brahman, the progenitor of the whole world. (9) The divine one resided in that egg during a whole year, then he himself by his thought (alone) divided it into two halves ; (12) and out of those two halves he formed heaven and earth, between them the middle sphere, the eight points of the horizon, and the eternal abode of the waters. (13) Dividing his own body, the Lord became half male and half female ; with that (female) he produced Virāj (32)" (Manu 1,5,6,8,9,12,13,32 ; trans. G. Buehler).

The unborn god lays his seed in the primeval waters created by him and finally goes forth from the golden egg as Brahman. This self-existent Brahman divided himself into two halves, heaven and earth and then into half man and half woman. From this androgynous constellation the son Virāj comes into being.

From verse 13 onward cosmogony is followed by anthropogony. In this process of creation active and passive, creating and being created coincide ; thus the process appears twofold or one seems to reflect the other.

Puruṣa, the primeval Man

The word puruṣa means "man, male" or connotes human kind in general. In the Rig-Vedic Puruṣa myth (Puruṣa-Sūktam, 10.90) he appears as the "Macranthropos",[6] incorporating the universe. The cosmogonic image of Puruṣa is the source of creative power. He himself is creator and creation generated out of him. He is simultaneously creator and material of creation—subject and object—sacrificer and sacrifice. Being sacrificed by the gods the fat and severed limbs of the Macranthropos provide the matter constituting the vedic universe. His head for instance becomes heaven, his feet become the earth.[7] In a way "Puruṣa encompasses the world-egg, the heaven and the earth".[8] The motif of self-sacrifice and dismembering of the demiurge is a mark of Indo-European mythology.[9] Although it originates already in times primeval the hymn however appears at the end of the Rig-Veda :[10]

"The Man has a thousand heads, a thousand eyes, a thousand feet. He pervaded the earth on all sides and extended beyond it as far as ten fingers. (1) It is the Man who is all this, whatever had been and whatever is to be. He is the ruler of immortality, when he grows beyond everything through food. (2) Such is his greatness, and the Man is yet more than this. All creatures are a quarter of him ;

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three quarters are what is immortal in heaven. (3) With three quarters the Man rose upwards, and one quarter of him still remains here. From this he spread out in all directions, into that which eats and which does not eat. (4) From him Virāj was born, and from Virāj came the Man. When he was born, he ranged beyond the earth behind and before. (5)...Furthermore it is narrated that 'from that sacrifice in which everything was offered' the Vedas and various amimals, and from his dismembered limbs the castes, the moon, the sun, Indra, Agni, the wind, the mid-air, the heaven, the earth and the regions of universe came forth" (RV 10.90 ; trans. W.D.O'Flaherty).

The introductory verses comprise the huge dimensions and proportion[11] and greatness of the Macranthropos, with the births of Puruṣa and Virāj as a sequel. Then follows the description of the process of creation.

This myth attempts to shed light on the innermost being of Puruṣa and Virāj. The origin of Puruṣa remains in the dark, but he was forever existing, eternal, potentially the primeval chaos, for Macranthropos is just another name for primeval chaos.[12] The primeval man is simultaneously god and man or lord over gods and men, the whole universe, the evolved and the evolving, and the master of immortality—in other words an anthropomorphous primeval god. This patriarch of mankind is in possesion of all creative powers and integrates the male and female principle. Thus Puruṣa is a male androgyne.[13/14] His female faculty of birthgiving is superimposed and an addition to his original masculinity. The mutual birthgiving of Puruṣa and Virāj is obviously paradoxical, like that of Aditi and the golden Germ. In this case Puruṣa bears Virāj and later Virāj Puruṣa. Both are self-generating which implies that both are androgynes. But with a difference : Virāj's potency is derived from Puruṣa. The androgynous couple integrates antagonistic opposites. But it should be kept in mind that the creative faculty of Virāj is confined to bearing Puruṣa!

The concept of representing a holistic universe (cf. AV 10.2 and ŚB 6.1.3-5 ; 14.4.2.1) is taken up and interpreted in Aitareya-Upaniṣad [AU]. Whereas the origin of Puruṣa remains dark in the Rig-Veda, he is fetched from the waters and shaped by Ātman in the Aitareya-Upaniṣad[15] like Prometheus[16] created man and God created Adam.[17] In the Aitareya-Upaniṣad it is said :

"This (world) verily was before (the creation of the world) soul alone, and nothing else whatsoever active (or non-active). He reflected : 'Let me create the worlds'. (1) He created these worlds, *viz.*, the sphere of waters, the sphere of the sunbeams, the sphere of death, and the sphere of the waters. The sphere of water lies above the heavens ; the heavens are its resting place ; the sphere of the sunbeams the atmosphere ; the earth the world of death ; the worlds which are beneath it are

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the sphere of waters. (2) He reflected : These worlds are indeed (are created). Let me create the protectors of worlds. Taking out from the waters a being of human shape, he formed him. He heated him (by the heat of his meditation). (3) When he was thus heated the mouth burst out, as the egg (of a bird)— from mouth the speech, from speech fire (Agni, the presiding deity of speech). The nostrils burst out—from the nostrils breath, from breath the wind (Vāyu, the presiding deity of breath). The eyes burst out—from the eyes sight, from the sight the sun (Āditya, the presiding deity of the eye). The ears burst out—from the ears hearing—from hearing the quarters (the presiding deities of the ear). The skin burst out—from the skin the hairs—from the hairs the annual herbs and the regents of the forest the trees (the presiding deities of the hairs of the body). The heart burst out—from the heart the mind—from the mind the moon (the presiding deity of the mind). The navel burst out—from the navel the vital air which goes downwards—from this death (the presiding deity of the descending vital air). The organ of generation burst out—from the organ of generation seed, from seed the waters (the presiding deities of the seed) (4)" (AU 1.1 ; trans. E. Roer).

Other than the Rig-Vedic Puruṣa the Puruṣa of Aitareya-Upaniṣad is created by Ātman (the Self) and the universe evolves from splitting his body ; in the Rig-Veda, however, he is being dismembered. Inspite of variations both the myths follow basically the same principle : The unfolding of one into many, of oneness into plurality : the god Puruṣa there, the created Ātman-Puruṣa here.

Ātman gives birth to Puruṣa, or in other words, he generates himself ; he is self-created-androgynous. At the end of the hymn Puruṣa's phallus splits, thus generating semen and out of it water. Semen (subject) and water (object) were originally one : The splitting up of the unity of Puruṣa causes a chain of androgynous potencies : coupling with and fructifying each other.

Prajāpati, Lord of the Creatures

Puruṣa, the abstract concept of a creator, is analogous to the "golden Germ" in the Rig-Veda. Although therein various theories of creation concur the Brāhmaṇas stipulate Prajāpati as the only creator, however they take up the various processes of creation in the former : Prajāpati is "a late vedic cosmogenic concept, representing not only the personified forces of nature as a single creative force, but also combining and including in the idea the creator theories represented by Puruṣa and Hiraṇyagarbha, until Prajāpati was finally merged in the concept of Brahmā".[18] Nevertheless Prajāpati and the other gods are manipulated by the Brāhmiṇ priests ; Prajāpati, however, holds a place of honour.

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The ways and methods leading to the creation by Prajāpati are not straight but involved : at first being alone he attempts to emanate it from himself. Then he finds his second, Vāc (the speech), couples with her and continues creation.

In the Śatapatha-Brāhmaṇa it syas :

> "Desiring offspring, he went on singing praises and toiling. He laid the power of reproduction into his own self. By (the breath of) his mouth he created the gods..." (ŚB 11.1.6.7).

Here Prajāpati's potency appears rather spiritualized as "breath", whereas the following quotation illustrates the creative act. The same text relates how Prajāpati is able to generate butter and milk out of himself as a sacrifice by rubbing his hands :

> "...He desired an offspring in his own self, and rubbed (his hands). He then obtained either a butter-offering or a milk-offering,—but indeed, they are both milk...Out of this offering plants, sun and wind came forth" (ŚB 2.2.4).

If the male Prajāpati is able to generate butter and milk out of himself they are bound to emerge from his genitals or his breasts. Butter and milk could pose as germs for reproduction or nourishment.[19] Furnished with breasts and male genitals he is a hermaphrodite. —A myth in the Edda offers a parallel[20]. The Norse giant Ymir generates a six-headed son by rubbing his feet.

In the Taittiriya-Brāhmaṇa it says, Prajāpati grew breasts in order to feed the creatures. Being milked dry he felt empty (TB 13.11.8 ; 9.6.7 ; JB 1.225 ; MS 1.6.9). There as above he is a hermaphrodite.

In the Śatapatha-Brāhmaṇa Prajāpati's act of creation takes a dramatic turn :

> "This Prajāpati, the year, has created all existing things, both what breathes and breathless, both gods and men. Having created all existing things, he felt like one emptied out, and was afraid of death" (ŚB 10.4.2.2).

The act of creation leaves Prajāpati so empty that he feels like going back on the emanation that drained him. Here a basic pattern evolves : The creation can come into existence only from a primeval unity, form a self (atmanaḥ, atmano 'dhi/out of own's self) ; for the creator had to be a god preceding all other gods.[21] There was no idea of an original couple of opposite sex generating creation by the conjugal act (mithuna). Oldenberg comments : "A mithuna heading the act of creation was contrary to the envisioned lone creator existing at the beginning of life".[22]

This dilemma was solved in the Kāṭhaka-Saṃhitā, though in a somewhat round-about way. It explains why Prajāpati takes the shape of a double-sexed sacrificial animal :

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> "Prajāpati being desirous of making the creatures did not find a second for the purpose of coupling. Then he took on that (androgynous) shape, coupling with his own thumb, thus generating the creatures" (KS 12.7.14-16 ; my translation).

Here Prajāpati is identical with this sacrificial animal ; androgynous like it he couples with himself—committing internal incest—to start creation. Whatsoever : Here again Prajāpati is a hermaphrodite.

In the Śatapatha-Brāhmaṇa Prajāpati appears as a pregnant woman (this concept might be at the bottom of the Rig-Vedic Soma and Parjanya) :

> "For, when that (part) of his body had been restored, Prajāpati became pregnant with all beings ; whilst they were in his womb, (evil) and death seized them" (ŚB 8.4.2.1).

Here Prajāpati's pregnancy means "evil and death" for beings growing within him—foreshadowing human fate bound to end up in death. Be that as it may, the male god Prajāpati, pregnant as a woman, is a simultaneous androgyne.

At first Prajāpati was the only one. Then a second emanates from him, Vāc (f., Speech). In the Pañcavimśati-Brāhmaṇa [PB] it says :

> "Prajāpati (at the beginning) was alone this (universe) ; the Word was his only (possession) : the Word was the second (that existed). He thought : 'Let me emit this Word, it will pervade this whole (universe)'. He emitted the Word and it pervaded this whole (universe)" (PB 20.14.2).

Vāc, Prajāpati's possession, is nothing but his female potency splitting up and multiplying herself. Vāc represents a female component in the process of creation. This pairing, however, was originally accomplished by splitting off Vāc from Prajāpati. It was withdrawn when he resorbed the female into himself, thus restoring his oneness.

Another version of the above mentioned myth turns up in the Kāṭhaka-Saṃhitā [KS] :

> "Prajāpati was indeed this (universe) ; Vāc was his second (half). He copulated with her. She conceived the fruit of his loins. She left him. She brought forth these creatures. And then she re-entered Prajāpati..." (KS 12.5.15ff ; 27.1.8ff ; my translation).

Here Prajāpati is a full-fledged androgyne, a birth-giving magna mater. He, the male principle, coupling with Vāc, the female principle and incorporating her follows the anthropomorphous pattern. But the distinguishing feature is that Vāc having accomplished her part in the creative process is resorbed by him, thus establishing Prajāpati's lone creative power.

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In both the quotations the relation between Prajāpati and Vāc is fairly well-defined, but in the Śatapatha-Brāhmaṇa this constellation undergoes a change. Prajāpati copulates with Vāc, then instead of her he becomes pregnant. Moreover he gets impregnated even by the plants he eats. From these pregnancies gods, men and everything are born, he however, ends up dead. He dissolves and Agni puts him together again :

> "By his mind (manas) he entered into union with Speech (Vāk) : he became pregnant with eight drops. They were created as eight Vasus : he then placed them on this (earth). (6)...And so they say, 'Prajāpati, having created these worlds, was finally established on this earth. For him these plants were ripened into food : that he ate. He became pregnant. From the upper vital airs he created the gods, and from the lower vital airs the mortal creatures'. In whatever way he created thereafter, so he created...(11)" (ŚB 6.1.2.6-13).

Prajāpati is the male creator. This pregnancy poses a variation of his attempts to create the universe out of himself. His creation as well as He, the anthropomorphous creator, bear the stigma of fateful mortality. His collapse after birth-giving and his restoration by Agni undermine his position as a lone creator. But this is a consequence of anthropomorphism which includes the naturalistic copulation between Prajāpati and Vāc.

Ātman, the Self

The Puruṣa of the Veda, the Brāhmaṇas and the Upaniṣads is the primeval god, the origin of being and creation. The above mentioned myths in the ancient texts imply the knowledge that creation requires male and female potency and the union (mithuna) thereof. In the Puruṣa myth in the Rig-Veda Puruṣa bears Virāj, and in the Aitareya-Upaniṣad semen and water go forth from Ātman-Puruṣa's phallus. The Prajāpati of the Brāhmaṇas creates Vāc, his second, copulates with her hesitantly and thus sets off creation.

In the Bṛhadāraṇyaka-Upaniṣad the most important concepts of creation as laid down in the Vedas and the Brāhmaṇas are summarized : dismembering of the ritual sacrifice and incest. At first the Puruṣa of the Bṛhadāraṇyaka-Upaniṣad—like the above mentioned Puruṣa—was alone. He did not relish his loneliness and asked for a second. Thus he split himself into male and female, the female part being his daughter. He copulated with her and created men. She being aware of the incest withdrew from him and transformed herself into a cow. Then he changed into a bull. Their copulation generated the species of cattle. Changing into a mare and a stud and so on they created all species :

> "In the beginning, this universe was Soul [ātman] in the form of the Man [Puruṣa]. He looked around and saw nothing other than himself...He did not rejoice ; therefore

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one who is all alone does not rejoice. He desired a second. He was of the same size and kind as a man and woman [stṛipumaṃsau] closely embracing. He caused himself to fall [pat] into two pieces, and from him a husband and a wife [pati and patni] were born. Therefore Yajñavalkya has said, 'Oneself is like a half fragment' [ardhabṛgalam]. Therefore this space was filled by a woman. He united with her, and from this mankind was born. She reflected, 'How can he unite with me after engendering me from himself? For shame! I will conceal myself.' She became a cow ; he became a bull and united with her, and from this all the cattle were born. She became a mare ; he became a stallion. She became a female ass ; he became a male ass and united with her, and from this all whole-hooved animals were born. She became a she-goat ; he became a billy-goat ; she became a ewe ; he became a ram and united with her, and from this goats and sheep were born. Thus he created all the pairs, even down to the ants. He knew that he was creation, for he created all of this..." (BAU 1.4.1-4 ; trans. W.D.O'Flaherty).

Ātman, identical with Brahman, is at the beginning of time the sole existing and emanating entity, *i.e.* creator and creation in one. This Ātman-Brahman-Puruṣa in possession of the innate bipolarity male-female is subsequently able to issue both sexes.

The dimensions of this Ātman-Brahman are analogous to those of Puruṣa. "He was as big as a woman and a man embracing each other"—like the male and female embracing each other in Plato's Symposium.[23] This Puruṣa splitting into two halves for the sake of creation sacrifices himself. Thus he creates man as husband and woman as wife, who is his daughter Satarūpā.[24] The terms husband and wife establish a distinction between the sexes, their relationship and a social order. The Self being one half only—this idea might have inspired the idol of Śiva-Ardhanārīśvara, the Indian embodiment of androgyny. He commits incest with his daughter, a mythical act, probably copied from the Rig-Vedic original (RV 10.61.5-7 ; 1.164.33 ; 5,42.12-13). After generating man with her she is ashamed of the incest with her father and flees from him like Saraṇyū from Vivasvat or Nemesis from Zeus in the Greek mythology.[25] Then both of them take the theriomorphic shape, the incest continues generating a range of species.

The Ātman-Brahman-Puruṣa gives birth, creates a woman out of himself and is as such an androgynous god. His double potency produces a woman and together they make an androgynous couple. In verse ten Brahman comments on himself : 'Once I was Manu, once I was the sun'. Brahman, Manu, the son of the sun (*vide* Manu) and the himself (*vide* Hiraṇyagarbha) are also androgynous gods. Thus a chain of a androgynous godheads takes shape : Ātman-Brahman-Puruṣa-Manu-Sun, all of them incorporating the same principle.

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SUMMARY

A documenting and interpreting investigation of the vedo-brāhmaṇic period illustrates that bisexuality is the innermost quality of the mythical gods. Existent already in the Rig-Veda, the oldest Indo-Aryan ṣcripture, the other Vedas, the Brāhmaṇas and the Upaniṣads just diversify this ancient theme. That becomes evident if one pursues the alterations a distinct god undergoes through the epoches.

As in other cultures the Hindu mythology devised various androgynous modes and ascribed them to different godheads : Heaven and Earth, Aditi and Indra as the parents of the universe, Aditi and Dakṣa mutually bearing, Yama-Yamī the twins, Indra, Tvaṣṭṛ, Agni, Soma, Parjanya, Pṛśni, the Bull-Cow and Prajāpati, Puruṣa, and Ātman the lone creators—all of them simultaneous androgynes. Aditi bearing Dakṣa and gods, Dakṣa bearing Aditi, Manu generating Parśu and Iḷā, the mother of Purūravas, are self-generating gods. Indra as Menā and Vilistengā are the only alternating androgynous divinities. The gods dividing themselves sexually are Puruṣa, Prajāpati, Ātman-Brahman, and Svayambhū. Prajāpati is the only godhead appearing as a hermaphrodite.

Specifications like heaven-earth, golden egg, darkness, primeval waters or Puruṣa mean the primeval chaos, and that implies original androgyny. Also the goddess Aditi creating the air, the earth and gods is an original androgyne.

Of the various types of androgyny originating in the vedo-brāhmaṇic period the alternating one as incorporated in Indra and the self-dividing into male and female as incorporated in Puruṣa, Prajāpati and Ātman-Brahman gain on the others and flourish in the literature of later periods.

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9. *op. cit.*, 928 ; s. also, Grant M. and Hazel J., *Who is who in classical Mythology*, p. 417 ; Delcourt M. : *Hermaphrodite, Mythes et rites de la bisexualité dans d'Antiquité classique*, p. 29.
10. Delcourt M. : *Hermaphrodite, Mythes et rites de la bisexualité dans d'Antiquité classique*, p. 29.
11. Kerényi K. : *Die Mythologie der Grlechen*, Vol. II, p. 155 ; s. also : *Apollodoros Mythographos*, 2.4.3.
12. Rocher W.H. : *Ausfuehrliches Lexikon der griechischen und roemischen Mythologie*, Vol. 1.2, p. 234ff.
13. Aeschylos : *Fragment* 61 (*cf.* Delcourt M. : *op. cit.*, p. 40).
14. L.S.A.M. von Roemer, *Die androgynische Idee des Lebens, Jahrbuch f. sexualle Zwischenstufen*, VII, 1903, p. 806, 810, 915. (cf. *Pausinae graeciae descriptio*, Lib. VII, 17) ; s. also Rocher W. H. : *Ausfuehrliches Lexikon der griechischen and roemischen Mythologie, sub "Mise"*, p. 3023.
15. Rocher's comment on the position of the divine Hermaphroditos runs as follows : "The bisexuality of this supernatural being symbolizes in a transparent way a luxurious procreative power. Thus it happens that the hermaphroditic nature was attributed to other related figures—they were just called Hermaphroditos, for instance Dionysos, Priapos" (Rocher W., *op. cit.*, Vol. 1.2, p. 2316 ; my translation from German).
16. Reden S. V. : *Ugarit und seine Welt*, p. 324.
17. *The Old Testament, Genesis*, 2.21.
18. "In the old songs—the only feasible way to hand down among them - the Germans celebrated Tuisto, the god who arose from the earth. To him they asribe a son Mannus, whom they praise as progenitor and founder of their peoples. This one was said to have had three sons, according to them the Germans living near the North Sea were called the Ingaevones,

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those living in the interior Hermiones and the residents on the Rhein the Istaevones " (Tacitus C.C. : *Germania*, 2 ; my translation).

19. Carnoy A. J. in : *Mythology of All Races*, Vol. I, p. 304.
20. Of late the image of Ardhanārīśvara is manufactured in a 'batic-printing' process at Puri and offered for sale.
21. Meinhard H. : *Beitraege zur Kenntnis des Śivaismus nach den Purāṇas*, p. 27-34.
22. Baumann H. : *Das doppelte Gesclecht*, p. 142-152.
23. O'Flaherty W.D. : *Women, Androgynes and Other Mythical Beasts*, p. 310-334.
24. Winternitz M. : *History of Indian Literature*, Vol. I, p. 75.
25. O'Flaherty W.D. : *The Rig-Veda—An Anthology*, p. 1826.
26. Renou L. : *Vedic India*, p. 55.

The Primeval Parents

1. O'Flaherty W.D., *Women, Androgynes and Other Mythical Beasts*, p. 312.
2. One example each from the Sumerian and Egyptian cultures, which are considerably older than the Indian, should suffice to testify to the archaic character of this myth : The Sumerian myth : "After heaven had been removed away from the earth, after earth had been separated from heaven...after An had carried off heaven, after Enlil had carried off earth..." (Kramer S. N. : *The Sumerian Mythology*, p. 37). One of the Egyptian myth of the separation of sky-earth of the Egyptians runs as follows : "The world, that arose from the primordial waters, looked chaotic indeed, because heaven and earth were not yet separated, and the goddess of heaven, Nut, lay still uppon her husband Keb, the god of the earth. Then her father Shu, the god of the air-region, pushed himself under her and raised her high up, and together with her everything got lifted, that was createrd so far..." (Erman A. : *Die Religion der Aegypte*r, p. 62f. ; my translation from German).

   A comparision of the above myths with those of the Indian shows common features : On one hand they follow the pattern of androgyny and on the other the gods are at work to separate heaven and earth.
3. O'Flatherty W.D., *Women, Androgynes and Other Mythical Beasts*, p. 310.
4. Varuṇa : RV 7.86.1 ; 8.41.10 ; 8.42.1 ; Maruts : RV 8.83.11 ; Soma : RV 9.101.15 ; 9.70.2 ; 9.76.1 ; 9.89.6 ; 9.109.6 ; Indra : RV 6.17.7 ; 10.44.8 ; 10.89.4 ; 2.12.2,3 ; 2.15.2 ; 2.17.5 ; 6.47.4,5 ; 10.111.5 ; 10.113.4 ; 5.29.4 ; 8.6.16,17 ; 2.11.5 ; 1.14.2,3 ; 3.8 ; Agni : 1.67.3 ; 6.8.3. Viśvakraman : RV 10.81.2 ; Tvaṣṭṛ : RV 1.160.4. Vasu, Rudra, Āditya : ŚB 8.4.3.20 ; Aitareya-Brāhmaṇa : 4.27. (Staudacher W. : *Die Trennung von Himmel und Erde*, p. 310).
5. *RV* 6.17.5-8 ; 3.32.8 ; 3.44.2,3 ; 3.49.4 ; 1.62.5 ; 1.160.3.
6. "The milker is the child, the sun ; 'his' seed refers probably not merely to the bull but to the joint, androgynous creature that gives a fluid simultaneously—milk (from her) and seed (from him)" (O'Flaherty W.D., *The Rig-Veda—An Anthology*, p. 204).

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7. Kirfel W. : *Die Kosmogony der Inder*, p.6.
8. Glasenapp H. V. : *Entwicklungsstufen des indischen Denkens*, p. 51.
9. Baumann H. : *Schoepfung und Urzeit des Menschen im Mythos der afrikanischen Voelker*, p. 51 ; Brauer E., *Zuege aus der Religion der Herero*, p. 76ff.
10. 'Viraha' (love in separation), originally related to the cosmic-anthropomorphic level remains a characteristic component not only in religious (for instance the Bhakti-cult) but also in secular literature : Love in separation means pain, hence the longing for union with the beloved or with the god or the goddess.
11. Erman A. : *Die Religion der Aegypter*, p. 14f, 62f.
12. Lommel H. : *Die alten Arier*, p. 16.
13. The literal meaning of 'Aditi' is 'the unlimited' (a = not, diti = limit, bound). In the *Rig-Veda* Aditi is the goddess of limitless space, implying 'freedom' and standing for phenomena like heaven, earth, nature etc. On the basis of her cosmic character Max Mueller suggests the following interpretation : Aditi is "beyond, the unbounded realm beyond the earth, sky and heaven...though in more general language she may be identified with heaven and earth in their unlimited character" (Max Mueller *"Vedic Hymns" SBE* Vol. 32, p. 248f.).
14. Oldenburg H. : *Die Religion des Veda*, p. 205f.
15. Weyersberg M. and Lommel H. : *Paideuma*, I.3.1939, p. 140.
16. Lommel H. : Zeitschrift f. *Indologie and Iranistik*, III, p. 204f.
17. Weyersberg M. and Lommel H. : *Paideuma*, I.3.1939, p. 120-140.
18. Eliade M. : *The Two and The One*, p. 103-124.
19. Geldner K.F. : Der *Rig-Veda*, Vol. III, p. 253.
20. O'Flaherty W.D. : *The Rig Veda. An anthology*, p. 39.
21. Sāyaṇa's comments on the Rig-Vedic passage according to the Sātyānaka-Brāhmaṇa runs as follows : "Indra transformed himself into Menā of Vṛṣanaśva and lived in his house. When she was marriageable, Indra himself loved her".—The Ṣadvimśa-Brāhmaṇa explains this as follows : "The daughter of Vṛṣanaśva Menā was called Menakā. Indra loved her".—Deppert's extensive explanation reads as follows : As Menā of Vṛṣanaśva Indra is then his daughter and wife, the relationship is homosexual. According to Sāyaṇa's comments after the Sātyānaka Indra was at first the Menā and later her lover, and found himself, as it were, in the role of Vṛṣanaśva (Deppert J. : *Rudra's Geburt*, p. 364).
22. In the *Rig-Veda* Dānavas and the Dānavīs were the children of Dānu, one of the daughters of the goddess Diti. The Rig-Vedic Daityas (the descendents of the goddess Diti, sister of Aditi) and the Asuras were like the gods (Deva) of divine origin—all of them were demoted to demons in the Brāhmaṇas and later on.
23. Āsurī is also the name of the plant Sinapis Ramosa (L), which in *the Atharva-Veda* was used as a love-spell. All commentators are of the same opinion that this verse refers to the seduction of Vilistengā by Indra (*cf.* Whitney W. D. : *Atharva-Veda*, 7.38.2, comments).

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24. Winternitz M. : *History of Indian Literature*, Vol. 1, p. 178.
25. Vāyu, the Maruts and Parjanya are gods closely related to Indra.

The Ancestor of Mankind

1. The word Parśu means rib and is the name of Manu's daughter—on her identity, however, there are different opinions : "According to Sāyaṇa Parśu is a mṛgi, daughter of Manu. This is presumably the actual name of Vṛṣakāpayī" (Geldner K.F. : Der *Rig-Veda*, Vol. III, p.277, footnote ; my translation from German). O'Flaherty is of the following opinion : "Whether she is here identified with Vṛṣakapī's wife (or indeed, with Indrāṇī) or merely stands for all womankind who benefit from the fertility of the gods, is an open question" (O'Flaherty W.D. : *The Rig-Veda. An Anthology*, p. 264).
2. "Then God said, 'And now we will make human beings ; they will be like us and resemble us'...So God created human beings, making them to be like himself...Then the Lord made the man fall into sleep, and while he took out one of the man's ribs and closed up the flesh...He formed a woman out of the rib and brought her to him" (The Old Testament : Genesis, 1.26, 1.27, 2.21, 2.22, trans. : *Good News Bible*, 1976).—"When the Holy One, praised he be, created the first man, He created him bisexual" (Comments on Genesis by Rabba, 8 : 1, trans., A. Wuensche ; my translation from German).
3. Carnoy A.J. in : *Mythology of all Races*, Vol. VI, p. 304.
4. O'Flaherty W.D. : *The Rig-Veda. An Anthology*, p. 247.
5. Baumann H. : *Das doppelte Geschlecht*, p. 338.

Divinities in The Shape of Bull-Cow

1. In ancient Egypt Apis, the god of fertility was worshipped in the shape of a bull, frequently with a sun-disc between the horns. Equated with Osiris he was at the same time the god of death. Integrated in one figure they were worshipped as Sarapis by the Hellens and the Romans (Betz W., *Die Mythen der Aegypter*, p. 148ff, 134f). —The cow-shaped goddesses Nut and Hathor were the sacred providers of the Egyptians (*cf.* Aditi in ch. 2).—According to the Minoan mythology the bull was the symbol of prowess and fertility (Kerenyi K., *Die Mythologie der Griechen*, Vol. I, p. 88).—The Iranian mythology knows also the bull as the incorporation of cosmic fertility. It was killed by Mithra and all vegetation and creatures grew from his dead body (Lommel H., *Die Religion Zarathrustras*, p. 131).—According to the Nordic Mythology the cow Audhumala fed the primordial giant Ymir with milk from her udder (*Die Edda, Gylfaginnig*, 6, trans. by Simrock K.).
2. Sources : *Rig-Veda*, Varuṇa (1.24.14) ; Savitar (1.39.9) ; Rudra (2.1.6) ; Dyaus (1.31.1) ; Indra (1.74.1 among others) ; Agni (5.12.1 among others) ; Pūṣan (5.51.11) ; Soma (9.64.1).
3. The name is derived from the root 'takṣ', meaning 'to form' or 'to shape'.
4. According to Sāyaṇa Indra and Varuṇa.

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5. Geldner K.F., *Der Rig-Veda*, Vol. I, p. 403, comment.
6. *op. cit.*, p. 196.
7. The application of the word soma to the plant, the juice and the god obscures which is meant where.
8. Dowson with reference to this : "As a personification, Soma was the god who represented and animated the soma juice, an Indian Dionysus or Bacchus" (J.Dowson : *A classical dictionary of Hindu Mythology and Religion and Geography, History and Literature*, p. 302).
9. Hopkins characterizes Parjanya as follows : "Prajanya is, in short, the rain form of Indra, though given a distinct personality" (Hopkins E.W. : *Epic Mythology*, p. 128).
10. Geldner K.F. : *Der Rig-Veda*, Vol. I, p. 168, (comment).

The Only Creator

1. Eliade M. : *The Two and The One*, p. 109.
2. The cosmic-egg-cosmogony according to (a) the Chinese mythology and (b) Greek mythology : (a) "A well-known Chinese myth relates that in the beginning all was darkness. From a golden egg, which is divided into two, came Poonko Wong who made the sky out of the upper and the earth out of the lower half. He also made sun and moon (Kuehn A., *Berichte ueber den Weltanfang bei den Indonesiern und ihren Nachbarvoelkern*, Nr. 69). (b) One story from the rhapsodic cosmogony : Chronos forms a silvery egg from the Ether surrounded by chaos ; from this comes forth Phanes who is also called Eros, Erikepaios and Metis. He is of bisexual nature and of many-fold appearance (Staudacher W., *Die Trennung von Himmel und Erde*, p. 82 ; my translation from German).
3. O'Flaherty's interpretation of the term Hiraṇyagarbha : "It is a compound noun, whose first element means 'gold' and whose second element means 'womb', 'seed, embryo or child' in the *Rig-Veda* and later comes to mean 'egg'..." Furthermore she interprets the egg as a 'continuum of androgynous birth images,' : "The egg is both a female (that which is fertilized by seed and which contains the embryo that is like the yolk) and a male image (the testicles containing seed). Thus the range of meaning may be seen as a continuum of androgynous birth images : seed (male egg), womb (female egg), embryo, child" (O'Flaherty W.D., *The Rig-Veda.—An Anthology*, p. 26f).
4. Stutley M. and J., *A Dictionary of Hinduism*, p. 113.
5. Geldner K.F., *Der Rig-Veda*, Vol. III, p. 347, comment.
6. For this term see M. Eliade in *Quellen des alten Orients.—Die Schoepfungsmythen*, p. 23.
7. Compare M. Eliade on the separation of the feet from the head : "The act of separating the feet from the head symbolizes, in India, the fragmentation of the primal unity, therefore the creation. In the cosmogony contained in the *Rig-Veda* (10.90.14) the creation began with the separation of the head from the feet of the giant Puruṣa" (Eliade M., *The Two and The One*, p. 90f.).

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8. Baumann H., *Das doppelte Geschlecht*, p. 144.
9. To this Ymir, the Norse giant, offers a striking parallel : In the Edda it is said : "From Ymir's flesh the earth was created, from sweat the sea, from bone the mountatins, the trees from the hair, sky from the skull" (*Die Edda, Grimnismal*, 40 ; *Vafthrudnismal*, 21 ; my translation from German).
10. "This is evident from its (Puruṣa-Sūkta) reference to the three vedas and the four classes or varṇas, as from its monistic world view" (O'Flaherty W.D. : *The Rig-Veda. An Anthology*, p. 29).
11. The physical proportions of Puruṣa—three fourths upwards and one fourth downwards — resemble those of the Sumerian Gilgamesh and the Iranian Gayomard : "Two-thirds of him are god, one-third only man" (Schott A., *Das Gilgamesh-Epos*, 1. Table, II. 1 ; my translation from German).
12. Eliade M., *Quellen des Alten Orients. Die Schoepfungsmythen*, p. 20.
13. Bellinger G.J., *Im Himmel wie auf Erden*, p. 194.
14. O'Flaherty W.D., *Hindu Myths*, p. 34.
15. According to Ruben the reinterpreted translation of the verses 3b and 4a runs as follows : "Then the Self took a piece of mud from the primordial waters and like a potter gave it the shape of a primordial giant. The supreme soul then baked the primordial giant in the heat of his penances" (W.Ruben : *Die Philosophen der Upaniṣaden*, p. 232 : my translation from German).
16. "According to the description of Hesiod Prometheus himself created the human race out of clay which he found in Boeotian Panopea ; as an expert sculptor he could form the figures, whom then Athene animated with her breath" (Hesiod : *Theogony*, 571-84 ; Grant M. and Hazel J. : *Who's Who in Classical Mythology*, p. 353).
17. "Then the lord God took some soil from the ground and formed a man out of it ; he breathed life-giving breath into his nostrils and the man began to live" (*The Old Testament, Genesis*, 2.7 ; *Good News Bible*, 1976).
18. Stutley M. and J., *A Dictionary of Hinduism*, p. 229.
19. O'Flaherty W.D., *Women, Androgynes and Other Mythical beasts*, p. 26.
20. "Foot with foot a six-headed son was born on him" (*Die Edda, Vaftthrudnismal*, 33 ; K. Simrock ; my translation from German). From the citation it follows that the feet are the instruments of generation ("with"). It stands to reason that the procreative act is imagined as the rubbing of feet.
21. Oldenburg H., *Die Weltanschaung der Brāhmaṇa-Texte*, p. 167.
22. *op. cit.*, p. 172.
23. Plato : *Symposium*, 191D-193B.
24. In his comment on Bṛhadāraṇyaka-Upaniṣad Śaṇkara declares both the parts as Manu and Śatarūpā.

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25. "The goddess (Nemesis) fled ; she refused to copulate with the king of the gods, the son of Chronos. She was tormented by shame and justified anger. She fled over the firm land and dark sea. Zeus chased her and tried to catch her. In the sea she transformed herself into a fish. Zeus purused the waters for her upto the oceans and the edge of the earth. On firm land she took the shape of the creatures of the earth in order to escape the pursuing god. Ultimately Nemesis transformed herself into a goose, Zeus assumed the shape of a swan and mated with her. She gave birth to an egg, from which rose that beautiful woman, that should prove fatal to mankind, because of her the Trojan war broke out : Helen, the daughter of Zeus" (*Atheneus Grammaticus*, 334b ; retold by K.Kerényi : *Die Mythologie der Griechen*, Vol. 1, p. 86 ; my translation from German).

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CLIMATOLOGY IN ANCIENT INDIA : SOME ASPECTS

AJAY MITRA SHASTRI

INTRODUCTORY

Climate is of paramount importance for any society at any time as it determines to a very great extent human behaviour and development. And it is just impossible to ignore the climatic changes from time to time and not to devote any thought to them. We know that the climate is subject to alterations, often of quite a drastic nature, due to several reasons, both natural and man-made, and man is required to adjust to them or be prepared to face their perilous consequences.

Leaving the outside world and even Indian pre-history when man's dependence on climate was complete and unconditional, we have reason to believe that early Indian history also saw great changes owing to considerations of weather. The sites of flourishing Harappan culture reveal that during the period of the heyday of the civilisation they had a plentiful supply of water due to excellent rains resulting into good crops and prosperity which made its coming into being and continuance possible. The basins of the Sindhu (Indus) and Saraswati which formed its core area were very fertile with a rich alluvial soil yielding profuse agricultural output and providing enough fuel for burning the bricks which were so very extensively used in construction work that formed a distinctive feature of this civilisation. And one who sees these regions which are quite dry and sandy with very scanty rainfall at present can't even imagine that once they were the scenes of such a great culture. The river Saraswati which at that time flowed with great velocity into the Arabian sea dried up and became invisible giving the name *adarśana* ('invisible') to the place of its disappearance in Rajasthan and at present we have only some small insignificant and isolated streams in its place. And at the confluence of three rivers (*Tribeṇi-saṅgama*) at Prayāga (Allāhābād) it is only to be imagined while the waters of the remaining two rivers (Gaṅgā and Yamunā) are clearly visible. Not to go back even to such early times, even in the latter half of the fourth century B.C. when Alexander invaded north-western regions of undivided India (now in Pakistan) the weather was much more congenial with plentiful rainfall in the Sindh region which is just beyond imagination today.

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It is just not possible that such palpable drastic changes in climate did not stir the so very fertile Indian thought, and we have some evidence, though somewhat truncated, to show that our ancestors did contribute to the understanding of the climatic features and their genesis. In ancient Indian literature we come across detailed observations about seasons and rainfall, particularly the latter. We shall try to take a brief look at them hereunder.

MONTHS, SEASONS AND SEASON-DATES

Ancient Indians divided the year into twelve months basing on the *nakshatras* on which the full-moon-days fall, viz. *Chaitra, Vaiśākha, Jyeshṭha, Āshāḍha, Śrāvaṇa, Bhādrapada, Āśvayuja, Kārttika, Mārgaśīrsha, Pausha, Māgha and Phālguna.* These months were grouped under six seasons of two months each as follows :

Vasanta or spring	*Chaitra* and *Vaiśākha*
Grīshma or summer	*Jyeshṭha* and *Āshāḍha*
Varshā or rainy season	*Śrāvaṇa* and *Bhādrapada*
Śarad or autumn	*Āśvayuja* and *Kārttika*
Hemanta or winter	*Mārgaśīrsha* and *Pausha*
Śiśira or cold	*Māgha* and *Phālguna*[1]

These seasons with their typical features and affects on the conduct of the libidinous people form the basis of the descriptions in the *Ritu-saṁhāra* of the celebrated Sanskrit poet Kālidāsa whose date is, however, controversial with the two principal schools placing him in the first century B.C. and the fourth-fifth century A.D. But, curiously enough, he does not follow the standardised order of these seasons.[2] Similar poems dilating upon the affects of the different seasons on ordinary individuals continued to be composed in Sanskrit and its derivative languages for quite some time and form an important literary genre.

These seasons were further compressed into three principal seasons lasting four months each, viz. *Grīshma (Chaitra-Āshāḍha), Varshā (Śrāvaṇa-Kārttika)* and *Hemanta (Mārgaśīrsha-Phālguna).* These seasons are found employed for the purpose of dating in numerous early epigraphic records in the Deccan and South India from about the beginning of the Christian era to about early sixth century A.D.[3] For this purpose the year was split into three parts of four months each ending with the *Chāturmāsī* or the last day, generally the full-moon day according to the *pūrṇimānta* (concluding with the Pūrṇimā or full-moon day) system.[4] We also notice some variations in this system as the Maḷavallī (Kanataka) pillar inscription of the Kadamba king Hārītīputra Śivaskandavarman mentions the date with reference to the *Śarad* (autumn) season.[5] However, as we have already stated above, this system of dating did not continue after the sixth century A.D.

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RAINFALL

But we find that the rainy season received a much greater attention of the ancient Indian meteorologists than any other season inasmuch as it was most important for a primarily agricultural economy like that of India where agricultural operations depended mainly on good rains despite other irrigational facilities being available in certain areas which also needed timely rains. It was also essential for meeting long-term drinking water-needs. Varāhamihira, one of the greatest astronomers-astrologers that India can boast of and who lived around the middle of the sixth century A.D., observes that the life of the people depends on food-grains whose production in turn anticipates good rains.[6] According to the *Arthaśastra* of Kauṭilya, who lived during the reign of Chandragupta Maurya, for agricultural purposes the land was divided into two kinds, viz. *deva-mātṛika* depending exclusively on rains for irrigational needs and *adeva-mātrika* which had additional means of irrigation.[7] The country *(janapada)* with the land of the latter category was regarded as an asset. The great importance of proper rainfall can well be imagined from the fact that excessive rains *(ativṛishṭi)* and absence there of *(anāvṛishṭi)* were regarded as the first two of the six greatest calamities, the other four being the menace from locusts, rats, birds and a foreign invasion.

SOURCES OF STUDY

Though there is evidence to believe that some observations were made earlier, even as early as the *Ṛigveda,* as well, the earliest extant text dealing with some of the problems concerning rainfall is the *Arthaśāstra* of Kauṭilya dating from late fourth century B.C. As we shall see in the sequel, it speaks of the quantum of normal rains in different regions and their measurements. However, the most important detailed textual evidence comes from the *Bṛihat-saṃhitā* of Varāhamihira which devotes as many as eight chapters to various aspects of the topic as will just be seen.[8] But that he was not the first to dwell upon the theme is evidenced by allusions to fairly numerous earlier authorities like Garga, Parāśara, Vajra, Kaśyapa, Bādarāyaṇa, Asita-devala (or Asita and Devala) and others whose views are found cited in his work. However, unfortunately for us, all these texts, with only some exceptions[9] are either lost or not traceable at present. But Bhaṭṭotpala in his commentary (vivṛiti) on the *Bṛihat-saṁhitā* quotes from these authorities as well as from one Siddhasena, showing that texts attributed to these authors were still extant in the ninth century A.D. when he lived. But most of these texts were rendered superfluous by the exhaustive treatment of the theme in the *Bṛihat-saṁhitā* which overshadowed them all which were consequently ignored and got lost in the process. Extracts from these works by Bhaṭṭotpala are also quite useful inasmuch as they enlighten us about earlier efforts on the subject. The *Kṛishi-Parāśara,* also known as *Kṛishi-paddhati* or *Kṛishi-saṅgraha,* which is devoted to agriculture and allied matters, also devotes a considerable space to predictions about rainfall and its measurement,

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etc.[10] At the Bhandarkar Oriental Research Institute, Pune, are preserved four manuscripts of a tract captioned *Megha-mālā* which is exclusively devoted to predictions concerning rainfall.[11] These texts apart, casual allusions to matters appertaining rainfall are found scattered in works on other subjects and belles letters. These include, *inter alia,* the *Ṛigveda,* Pāṇini's *Ashtādhyāyī,* Śudraka's *Mṛichchhakaṭika,* Kālidāsa's *Megha-dūta,* Kalhaṇa's *Rāja-taraṅgiṇī,* etc. The discussion in these pages is based primarily on these works.

PREGNANCY OF CLOUDS *(GARBHA-LAKSHAṆA)*

It was believed that the process of the formation of clouds began operating six months and a half before actual rains came, and in the ornate style of those days clouds conceive *(garbha)* in autumn-winter and give birth *(prasava)* to rains 195 days or six and a half months later. This notion appears to be as old as the *Ṛigveda.* Most probably *Ṛigveda,* 1. 6. 4 *(Ādaha svadhām = anu punar = garbhatvam = erire dadhānā nāma yajñiyam)* contains an allusion to the formation of rain-embryos, and the commentator Sāyaṇa aptly interprets it by *megha-madhye jalasya garbh-ākāraṁ preritavantaḥ.*[12] Meteorologists differed greatly as to the time when the formation of the rain-embryos actually begins. According to some, the clouds begin to conceive after the bright half of the month of *Kārttika* (October-November).[13] Siddhasena, as cited by Utpala, also held the same view,[14] and the *Meghamālā* description is similar.[15] This was, however, not the majority view : *na cha tan = matam bahūnāṁ.*[16] According to Garga (and Utpala adds), Vasishṭha, Parāśara, Ṛishiputra and Kaśyapa, marks of pregnancy of clouds could be detected from the first day of the bright half of the month of *Mārgaśīrsha* (November-December) onwards when the moon enters *Pūrvāshāḍhā.*[17] The foetuses thus formed give birth to rains 195 days later (after six and a half months) when the moon is in conjunction with the same asterism as that when conception occurred.[18] The clouds formed in the bright half *(śukla-paksha)* rain in the dark half and *vice versa* ; those conceived during the day fructify during the night and *vice versa* ; while those formed in the east pour water in the west and *vice versa* ; those conceived at dawn bring rain in the evening and *vice versa* ; so on and so forth.[19] The clouds conceived at the commencement of *Mārgaśīrsha* and in the bright half of the month of *Pausha* (December-January) give but little rain.[20] These details are tabulated in the following chart which indicates the months and fortnights of the conception of rain-embryos and their delivery respectively.[21]

Conceiving Period	Delivery Period
Pausha kṛishṇa (dark half)	*Śrāvaṇa śukla* (bright half)
Māgha śukla	*Śrāvaṇa kṛishṇa*
Māgha kṛishṇa	*Bhādrapada śukla*

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Conceiving Period	Delivery Period
Phālguna śukla	*Bhādrapada kṛishṇa*
Phālguna kṛishṇa	*Āśvina śukla*
Chaitra śukla	*Aśvayuja kṛishṇa*
Chaitra kṛishṇa	*Kārttika śukla*[22]

AUSPICIOUS SIGNS NOURISHING RAINFALL

Some of the auspicious signs tending to nourish rain-foetuses are as under : pleasant, soft, northerly, north-easterly, or easterly wind ; clean sky ; sun and moon covered by glossy, bright and thick halo ; sky overcast with large, dense, smooth, needle-like or razor-shaped red, black or blue clouds and bright moon and other stars ; morning or evening *(pūrva- or aparasandhyā)* accompanied by rainbow, rumbling of thunder, lightning and appearance of mock-sun ; birds and animals with pleasant sounds in the north, north-east or east ; large, soft-rayed and unhurt planets moving in the *pradakshiṇa* (to the north of the concerned asterism) order ; trees with their sprouts unhurt, men and quadrupeds happy.[23] Clouds resembling pearls or silver-coloured or of the complexion of *tamata,* lotus or collyrium and of the shape of aquatic animals augur profuse rain, those scorched by fierce rays of the sun and accompanied by soft breeze pour excessive water at the time of delivery *(prasava-kāla).*[24] We next find enumerated symptoms appearing in particular months tending to support rain-foetuses as follows :

Mārgaśīrsha (November-December)	Absence of severe cold
pausha (December-January)	Absence of thick frost

The nourishing signs common to both these months are red glow of the horizon, in the morning and evening, and clouds accompanied by haloes.[25]

Māgha (January-February)—strong winds, sun and moon with their light obscured by frost, too much cold, appearance of clouds at sunrise and sunset.

Phālguna (February-March)—rough and violent gale, glossy and floating clouds, incomplete haloes round sun and moon, tawny or coppery sun.

Chaitra (March-April)—winds, clouds, rain and haloes.

Vaiśākha (April-May)—clouds, winds, rain, lightning and thunder.

The following signs, on the other hand, are indicative of a miscarriage of rain-embryos and tend to destroy all chances of a good rain foreseen from the aforesaid phenomena : fall of meteors, lightning, dust-storm, burning of quarters *(dig-dāha),* earth-quakes, clouds

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resembling in appearance cities, comets, planetary conflicts, thunder, marks of blood, oil, *ghee*, etc.[26] in rain-water, rainbow and appearance of Rāhu as well as other three portents, *viz.* celestial, atmospheric and terrestrial.[27] We are told by Bhaṭṭotpala that if any of these phenomena occur immediately following the formation of rain-foetuses, then there is little chance of resultant rainfall.[28] Besides, the signs just reverse of those general and special signs indicative of rainfall, enumerated above, reduce the chances of rains.[29]

We are told further that the cloud-foetuses formed in any of the six months from *Mārgaśīrsha* to *Vaiśākha* when the moon enters any of the five asterisms, viz. *Pūrva* and *Uttara-Bhādrapada, Pūrvāshāḍha* and *Uttarāshāḍa* and Rohiṇī, yield excellent rains ; an embryo formed in any month in the asterisms of Śatabhishaj or Aśleshā or Ārdrā or Svātī or Maghā develops and rains for many a day, whereas the embryos destroyed by the celestial, atmospheric and terrestrial portents *(utpātas)* are indicative of absence of rain for those very days ;[30] that formed in *Mārgaśīrsha* (November-December) rains for eight days ; that in *Pausha* (December-January) for six days ; that in *Māgha* (January-February) for sixteen days ; that in *Phālguna* (February-March) for twenty-four days ; that in *Chaitra* (March-April) for twenty days ; and that in *Vaiśākha* (April-May) for just three days.[31] A rain-embryo accompanied by all the five concomitants, *viz.* wind, water, lightning, thunder and cloud, rains much over an expanse of one hundred *yojanas* ; that accompanied by four phenomena over fifty *yojanas* ; that with only three phenomena rains over an area covering twenty-five *yojanas* ; one with only two over an area measuring twelve *yojanas* and a half, and that with only a single phenomenon only over five *yojanas.*[32] It is pertinent to note in the present context that Kālidāsa in his *Megha-dūta* (Pūrva, verse 5) specifies four of these five concomitant phenomena, viz. *dhūma* (cloud), *jyotis* (lightning), *salila* (water) and *marut* (wind).[33] We are told that too much rain at the time of conception tends to its destruction[34] and produces only a drizzle at the time of delivery.[35] But if a fully developed rain-embryo does not give rain at its proper time after one hundred and ninety-five days, it delivers hail-stones at the time of second conception, for, like cow-milk kept for long, water also becomes hard after crossing its normal period.[36]

The four days beginning with the 8th of the bright half of the month of *Jyeshṭha* (May-June) are treated as retainers of wind *(vāyu-dhāraṇā divasāḥ)* and the occurrence of soft, northerly or southerly or easterly wind as well as glossy clouds augurs good rain ; whereas a rain in the same month and fortnight (*Jyeshṭha śukla*) in the four asterisms, *viz.* Svāti, Viśākhā, Anurādhā and Jyeshṭhā, forebodes absence of rain in *Śrāvaṇa* (July-August), *Bhādrapada* (August-September), *Āśvayuja* (September-October) and *Kārttika* (October-November) respectively.[37] It is curious to note in this connection the casual allusion by Kalhaṇa to the westerly wind indicating the emergence of clouds.[38] Unfortunately no other

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detail is given which divests this otherwise interesting reference of much of its value. Kauṭilya observes that one could forecast rainfall by observing the position, motion and pregnancy of Jupiter, the rise and setting and the motion of Venus, as well as the modification in the natural aspect of the sun, and Venus indicated rain.[39]

MEANS OF DETERMINING FUTURE RAINFALL

Prospects of future rainfall could be forecast by a careful observation in the dark half of *Āshāḍha* of the size, brightness, colour, direction, etc. of the moon when in conjuction with Rohiṇi. For this purpose a *brāhmaṇa* astrologer went to a spot north or east of the town or village ; stayed there for three days observing fast and propitiating sacred fire ; drew figures of planets and asterisms on the ground and worshipped them with oblations coupled with incense and flowers ; sanctified all sorts of seeds with the Mahāvrata hymns and finally immersed them in water accompanied by gold and *kuśa* grass in a utensiḷ. Only such of the seeds and their parts as got sprouted during the moon's conjuction with Rohinī might be expected to thrive during the year and not others.[40] Water-pots already planted in the north, east, south and west were treated as indicative of rainfall in *Śrāvaṇa, Bhādrapada, Āśvayuja* and *Kārttika* respectively, full jars foretold good rain, while half-filled and empty ones presaged moderate rain and drought in the months represented by them.[41]

Likewise, pots bearing names of kings, countries and different castes foretold their future prospects.[42] Besides, the direction of the future rainfall could be ascertained by carefully observing the course of winds by means of a black flag, four cubits long hoisted on a staff, twelve cubits high, at the time of the moon's conjunction with Rohiṇī : for this purpose four watches (3-hour periods) of the day were believed to represent four months beginning with *Śrāvaṇa* respectively, and their parts corresponded to the days in their respective months.[43] If the wind blows simultaneously from two directions, that showing greater strength was taken into consideration. The *Kṛishi-Parāśara* (verse 34) also lays down the use of a flag for ascertaining the direction of the wind. It shows the use of weather-vanes in those days as at present.[44] In this connection the colour, size, etc., of the clouds were also carefully observed and are delineated in great detail by Varāhamihira.[45] Similar observations were made at the moon's conjunction with the asterism Svāti in the bright half of the month of *Āshāḍha* (May-June) : a rain in the (i) first, (ii) second and (iii) third watches of the night foretold the abundance of (i) all crops, (ii) sesame, green gram and black gram, and of (iii) summer crops respectively. Likewise, rain in the (i) first, (ii) second, (iii) third part of, and (iv) for the whole day foresaw (i) good rain, (ii) rain coupled with insects and snakes, (iii) moderate rain, and (iv) timely rains respectively. If there are snowfall, strong and speedy winds, continuous thunder and lightning at the moon's conjunction with Svāti on the seventh day of the dark half of *Māgha*, good rains and crops may be forecast.[46]

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One more way of determining future prospects of rainfall and crops was to keep sanctified seeds of all kinds in equal quantities for the whole night of the full moon of *Āshāḍha* : such of the seeds as showed an increase in weight would thrive, while those that diminish would not flourish ; and such as neither increase nor decrease would grow moderately.

In the *Kṛishi-Parāśara* we get elaborate rules for ascertaining the ruler and the minister of the year in question and their impact on rainfall involving astrological matters that need not detain us here. An interesting method of determining the quantity of rainfall for the whole of the forthcoming year as found in this text may be outlined as follows : The whole of the month of *Pausha* is to be split up into twelve equal parts, each consisting of two days and a half and representing the twelve months of the year commencing with *Pausha*. The course of wind ascertained by means of a flag during these twelve parts of *Pausha* foretold rainfall in the months represented by them : the wind blowing from the north or the west in any of the aforesaid parts of *Pausha* is indicative of good rainfall in the months thus represented, whereas that blowing from the east or south foretold scanty rain ; if, on the contrary, wind does not blow in any definite direction, it would not rain at all, whilst the wind blowing at random foretells irregular rains. Every five *daṇḍas* (24 minutes) of *Pausha* correspond to a day of a month : the rainfall in the first half of this 5-*daṇḍa* period foresees rainfall in the day-time, whilst that in its latter half indicates rainfall in the night, so on and so forth (verses 12-23, 31-34). A shower accompanied by thunder-storm or lightning on the seventh day of the bright half of *Māgha* (January-February) and *Phālguṇa* (February-March) or the third day of the bright half of *Chaitra* (March-April) or *Vaiśākha* (April-May) foresees good rainfall and profusion of crops in that year (verses 39-40).

Yet another peculiar method is as under : in the first night of the bright half of *Vaiśākha* one was required to write the words 'Let there be success' *(siddhir = astu)* on a rod two hundred times, and then to erect that rod on the bed of a flowing river, dipping it up to the written mark in the water and finally to mark the next morning where the water-level stands : unaltered level indicates that the rainfall during that year will be the same as that in the previous year ; if the water-level goes up or down it foresees rainfall more of less than that of the preceding year ; the water-level rising above the marked spot on the rod foretells double rainfall and flood (verses 45-49).

The course of wind on the full-moon day of *Āshāḍha* was to be observed closely for determining the nature of rainfall (verses 56-57). A shower or absence thereof on the seventh day of the bright half of *Āshāḍha* indicates good rainfall or drought throughout the year (verse 38).

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SIGNS OF IMMEDIATE RAINFALL

The *Bṛihat-saṁhitā,* the *Kṛishi-Parāśara* and other works under consideration devote considerable space to the description of the signs that were believed to be symptomatic of immediate rainfall. Several of these beliefs are still current in different parts of the Indian subcontinent which evidences their persistency. Some of these phenomena are listed here : the sun with dazzling brilliance and burning with intense heat at the zenith of the sky ; tasteless water ; sky with the complexion of cow's eye ; uncontaminated directions ; moisture of salt ; absence of wind ; fishes coming to the banks ; repeated croakings of frogs ; cats scratching the earth with their nails ; accumulation of rust on iron ; construction of bridges on streets by children ; mountains looking like heaps of collyrium ; haloes of the complexion of cock's eye round the moon ; ants shifting their eggs without any apparent reason ; cows looking above at the sun ; reluctance of domestic animals to go out of the house and their shaking ears and hoofs ; dogs barking continuously looking at the sky ; lightning flashing from the north-east during daytime ; appearance of mock sun and moon ; cool breeze blowing from the east ;[47] excitation of cats, mongooses, sankes and other animals living in marshy spots ; rutting of young elephants ; aquatic birds beginning to dry their wings ; so on and so forth.[48] That these ideas were no innovations of astrologers and were in fact shared by the commonalty is evidenced by the fact that they are mentioned in a large number of ancient classics. Kalhaṇa, for instance, speaks of the cows looking up, serpents ascending the trees, and ants moving with their eggs as foretelling an immediate rainfall *(Uṭṭīkite gavāṁ vṛiksha-mūrddh-āroheṇa bhogināṁ, Pipīlaka-kulasy-āṇḍ-opasaṅkrānty-aiva varshaṇam, Rāja-taraṅgiṇī,* VIII, 715).

CLASSIFICATION OF CLOUDS

Varāhamihira's *Bṛihat-saṁhitā,* which forms the principal source of our information on the subject, does not give any classification for reasons best known to him. But the *Kṛishi-Parāśara* speaks of four classes of clouds, viz. (i) *Āvarta,* (ii) *Saṁvarta,* (iii) *Pushkara* and (iv) *Droṇa.* One of these predominates during a particular year : while *Āvarta* pours in particular localities only, *Saṁvarta* rains everywhere ; rainfall is scanty during the predominance of *Pushkara,* whereas there is profuse rainfall when *Droṇa* is dominant (verses 24-26). As Kālidāsa speaks of the *Pushkara* and *Āvarta* types of clouds,[49] this classification appears to have come into being by the Gupta age at the latest though, if Kālidāsa is dated as per the well-entrenched tradition in the first century B.C. this tradition may go back a few centuries earlier still. The popularity of this four-fold classification in pre-Gupta period is vouched for by the allusions to *Droṇa-megha and Droṇa-vṛishṭi* in Śudraka's *Mṛichchhakaṭika,* X. 26 and 39. A different and much more elaborate classification is met

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with in the *Megha-mālā* which enumerates as many as eighty kinds of clouds, ten each in the Mandara, Kailāsa, Koṭa, Jaṭhara, Śriṅgavera, Paryanta, Himavat and Gandhamādana mountains ; and next it offers their names, e.g. *Prabuddha* or *(Subuddha)*, *Nandaśāla* or *Mandaśāla, Kanyada, Pṛithakśravas, Vāsuki,* etc.[50] However, these names are not very clear and involve astrological details and some of the mountains are not yet located. A different type of classification seems to have prevailed in earlier times and is met with in Kauṭilya's *Arthaśāstra.* It speaks of three kinds of clouds that pour incessantly for seven days ; eighty are those that pour minute drops ; and sixty appear together with sunshine.[51]

MEASUREMENT OF RAINS

The practice of measuring rainfall appears to have been prevalent in India from very early times, and the oldest hitherto known reference to it is to be met with in Pāṇini's *Ashtadhyāyī* which has a special aphorism on the subject called *Varsha-pramāṇa* (III). The smallest measure of rainfall is mentioned as *goshpada* or cow's hoof in VI. 1.145. And the failure of rain or drought (*varsha-pratibandha*) is spoken of as *avagraha.*[52] Experts differed widely on the question of time when one ought to start measuring rains as well as other kindred matters. Varāhamihira lays down that rains should be gauged after the full-moon day of the month of *Jyeshṭha* (May-June) when it has rained in the asterisms beginning with *Pūrvāshāḍhā.*[53] Some others held that the quantum of rainfall should be gauged when for the first time in the season it rains sufficiently enough to free the earth from dust or when drops of water are visible on the tips of the blades of grass.[54] The quantity of future rainfall was also to be predicted accordingly as it rained in particular asterisms in the beginning of the season.[55] It was believed that in whichever of the asterisms it rained in the beginning, there would be repeated rains in the same asterisms.[56] Kaśyapa and others opined that if there be rain in any area whatsoever in the beginning, one might expect good rain throughout the season.[57] On the contrary Devala held that if it rains over ten *yojanas,* it is bound to pour plenty of rains during the whole season.[58] Garga, Vasishṭha and Parāśara were of the opinion that profuse rainfall must be expected if there be rain over an area of not less than twelve *yojanas* at the beginning of the rainy season.[59]

As we have just seen, the lowest measure of rainfall known as *goshpada* was in vogue in about the sixth century B.C. when Pāṇini flourished. But curiously enough, it is conspicuously missing from all the later works on the subject or even casually in non-professional texts. An entirely different set of measurements is found mentioned in later texts. According to Kauṭilya's *Arthaśāstra,* the state official called *sannidhātṛi* (superintendent of treasure-house) was entrusted with the responsibility of measuring annual rainfall. The

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gauge used for this purpose was one *aratni* or cubit in diameter.[60] As we shall see in the sequel, he specifies the measurement of rains in terms of *droṇa* and gives the normal measure of rains in various regions. Some eight centuries later in the sixth century A.D. the measurements *pala, āḍhaka* and *droṇa* were most popular as will follow from the *Bṛihat-saṁhitā* of Varāhamihira who is our greatest extant authority on the theme under consideration. According to this system of calculation,

50 *Palas*	1 *Āḍhaka*
4 *Āḍhakas*	1 *Droṇa*[61]

The rainfall was measured by means of a specially prepared round gauge with a diameter of one *hasta* or cubit (18 inches) and containing marks indicating *palas.* When filled to capacity, it indicated one *āḍhaka* of rainfall.[62] The *Samāsa-saṁhatā* describes this one cubit or *āḍhaka* measurement as *Māgadha-māna.*[63] It may thus be suggested that this system of measuring rainfall referred to by both Kauṭilya and Varāhamihira was in popular use more particularly in Magadha from at least the fourth century B.C. to about the sixth century A.D. for a period of around one thousand years. It seems that during the earlier period two systems of measurement developed in Magadha and Kaliṅga were prevalent and were called *Māgadha-māna* and *Kāliṅga-māna* respectively. The latter is referred to in the *Charaka-saṁhitā* (*Kalpastāna*, XII, 105), however, with the strengthening and expansion of the Magadhan political authority which ultimately came to envelope almost the whole of the Indian sub-continent, the *Māgadha-māna* turned into a pan-Indian national measurement and almost completely suppressed its Kaliṅga counterpart.

But ancient authorities were not unanimous regarding the size of the instrument for measuring rainfall. According to Parāśara as cited by Utpala, the diameter and height of the rain-gauge ought to be 20 *aṅgulas* (15 inches) and 8 *aṅgulas* (6 inches) respectively and when it is filled to the brim it measures one *āḍhaka.*[64] In fact, different kinds of measuring equipments were in vogue in different regions and periods and these works refer to their own times and areas.

Another popular method was to measure the rainfall on the ground itself. Parāśara informs us that if the rain-water measures one *dhanush* or four cubits, it equals one *droṇa* : *Dhanuḥ pramāṇaṁ medinyāḥ vindyād = droṇ-āti-varshaṇam* (See Parāśara cited by Utpala on *BS*, XXI. 32).

The *Kṛishi-Parāśara* offers a different interpretation of the measurement *āḍhaka* : We are told that a quantity of water spreading over an expanse of one hundred square *yojanas* and thirty *yojanas* in height equals one *aḍhaka.*[65] This description is, however, not quite clear.

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The same text prescribes the use of a vessel, 12 *aṅgulas* (9 inches) in length, breadth and height, for measuring rains. It could be fashioned from wood of the *chalita (Dillenia Indica)*, mango *(Mangifera Indica)* or *punnāga (Calophyllum inophyllum)* trees. The use of the wood of wood-apple *(Feronia elephantinum), pakur (Ficus infectoria)* or *nimba (Melia Indica)* trees was forbidden for the measuring vessel (*Kṛishi-Parāśara,* verse 220).

As per a definition encountered in the *Megha-mālā,* however, continuous rain for seven nights at a stretch was called *droṇa* : *Droṇa-saṅkhyā cha vijñeyā sapta-rātraṁ pravarshati.*[66]

Kauṭilya informs us that if one-third of the total annual rain came both during the months marking the commencement and closure of the rainy season (*Śrāvaṇa* and *Kārttika* respectively) and two-thirds in the middle (*Bhādrapada* and *Āśvayuja*) it augured good and prosperous crops : *varshā-tribhāgaḥ pūrva-paśchima-māsayoḥ dvau tri-bhāgau madhyamayoḥ sushamā-rupam, Arthaśāstra,* II. 24.6).

THE COMMENCEMENT OF RAINY SEASON

This together with the *Bṛihat-saṁhitā* evidence outlined above shows that the rainy season in those days was supposed to commence in the month of *Śrāvaṇa* and come to an end in *Kārttika* and not in *Āshāḍha* and *Āśvayuja* respectively as in our times. This also finds support from the evidence of early Pāli Buddhist literature. The Buddhist monks and nuns were expected to stay at a fixed place during the four months of the rainy season, this being technically known as *vassā-vāsa,* which was one of the most important monastic institutions not only for the Buddhists but also for the votaries of other earlier religious sects as well. And according to the Mahāvagga section of the *Vinaya-pitaka,* the *vassā* or rainy season was taken to commence from the day following the full-moon of the month of *Āshāḍha* or one month after it.[67] It obviously takes stock of the vogue of different practices in different regions for the rains did not begin and end at the same time all over India. It is difficult to determine the period of the origin of the current belief about the commencement and cessation of rains in *Āshāḍha* and *Āśvayuja* respectively. However, all these descriptions, whether *Śrāvaṇa-Kārttika* or *Āshāḍha-Āśvayuja*, are only general in nature regarding the whole of the Indian sub-continent and don't take into account aberrations like winter monsoons in the Tamil region.

QUANTUM OF RAINFALL IN SOME AREAS

While most of the aforesaid texts give only a generalised account of the practices appertaining rainfall without reference to any particular region, Kauṭilya alone, in keeping with his practical approach to problems, affords us an idea of the quantum of the rainfall in some of the areas. Thus we are told that sixteen *droṇas* is the quantity of rain in dry

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(jāṅgala) lands, one and half times that in the wet (Anūpa) lands, where sowings are in conformity with the nature of the region, thirteen droṇas and a half in Aśmaka country, twenty-three droṇas in the Avanti region, unlimited quantity in the Aparānta and snowy regions, and unlimited as to time in lands where sowing operations are made with the help of canals (*Shoḍaśa-droṇaṁ Jāṅgalānāṁ varsha-pramāṇam = adhyardham = Ānūpānām ; deśa-vāpānām = ardha-trayodaś-Āśmakānāṁ ; trayoviṁśatir = Avantīnāṁ ; amitam = Aparāntānāṁ, Haimanyānāṁ cha, kulyā-vāpānāṁ cha kālataḥ, Arthaśāstra,* II. 24.5). Thus, we can say that during the late fourth century B.C. when the *Arthaśāstra* was composed this was the average annual rainfall in the various regions listed as above. A *droṇa* was equal to 2 inches.

The *Kṛishi-Parāśara* (verse 30) would have us believe that if the total rainfall of the world be divided into twenty parts, ten parts fall on the oceans, six on the mountains and just four on land.

RESUME

Summing up, even though a large number of texts treating of ancient Indian meteorology have perished, what remains bears eloquent testimony to the great success achieved by Indians of yore in this field. What is required now is to scan ancient Indian literature of all hues and epigraphic records for eliciting any kind of information bearing on climate and meteorology which is sure to make the picture fuller.

It is indeed curious to find that many of the maxims and proverbs current among the Indian agriculturists today are rooted in the observations made by Indians millennia ago. As would have appeared from the foregoing discussion, Varāhamihira is the most celebrated extant authority on matters appertaining climatology, and therefore attempts were made to establish relationship of later writers and other experts on the subject with this luminary. A patent instance is furnished by a female diviner named Khanā[68] whose sayings on agricultural and climatic matters are so very popular among the village folk in Bengal. Khanā is popularly believed to have been brought up by the demons in Śrīlankā and later married to Mihira, son of Varāha, who had discarded him. He was, however, later picked up by the Śrīlaṅkan demons. Mihira grew up to be an astrologer and on ascertaining his parentage by calculations came back to India in Vikramāditya's kingdom where his father Varāha was a reputed figure and one of the nine jewels *(nava-ratnas)* of the court of Vikramāditya. The father and the son lived together and in course of time Mihira was elevated to the position of the tenth jewel by the king. The reputation of Khanā as an astrologer also spread far and wide. Overcome with jealousy, anger and feeling humiliated by the growing fame and popularity of Khanā, her husband and father-in-law conspired against

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her and cut off her tongue that resulted in her death. Of course, this overgrowth of legends has no historical basis and value but serves as an excellent example to illustrate the great fame of Varāhamihira as an illustrious meteorologist. The figures of Varāha and Mihira have been created by splitting the name into two and turning them into father and son.[69] The agricultural and meteorological proverbs so widely current throughout North India in the names of Ghāgha and Bhaḍḍari have also a great similarity with those met with in Varāhamihira's *Bṛihat-saṁhitā.*

REFERENCES

1. *Amara-kośa,* I.4.17-20 : Kāla-varga, verses 17-20.
2. It commences with *Grishma* and concludes with *Vasanta*, but otherwise the prescribed order is followed strictly. For the text, see *Kālidāsa-granthāvalī,* ed. Reva Prasad Dwivedi, 2nd edn, Banaras Hindu University, 1986, 7-35.
3. The latest epigraph to be so dated is the Malhārā plates of the Muṇḍa king Ādityarāja. See Ajay Mitra Shastri, 'The Malhārā Plates of Ādityarāja : A Re-appraisal, *journal of the Epigraphical Society of India,* IV, 1977, pp. 30-41, "The Date of the Malhārā Plates of Ādityarāja", *ibid,* VII, 1980, pp. 69-75.
4. This was the system current in North India as at present. But another system was prevalent in the Deccan and South India where the season-dates are mostly found recorded. It was known as *Amānta* as in it the months ended with amāvasyā or the fifteenth day of the dark fortnight (*Kṛishṇa bahula paksha*). It is possible that in this system the four-month groups were supposed to conclude with this day of the months of *Āshāḍha, Kārttika* and *Phālguna.* This conjecture finds support from what Utpala states in one context. See *infra* note 20.
5. *Vide* Luders List, No. 1196.
6. *Annaṁ jagataḥ prāṇāḥ prāvṛiṭ-kālasya ch-ānnam = āyattam.*

   Brihat-saṁhita (hereinafter referred to as *BS*), XXI. 1.

   It is noteworthy in this context that Kauṭilya also gives the information about rainfall in connection with the agricultural operations which the state officer called Sitādhyaksha (Officer-in-Change of Agriculture) was expected to oversee.
7. *The Kauṭilya Arthaśāstra,* ed. R. P. Kangle, University of Bombay, 1960, V.2.2 ; VI. 1.8. *BS,* chapters xxi-xxviii. The references, unless otherwise stated are to Sudhakara Dwivedi's edition with Bhaṭṭotpala's Vivṛiti commentary, two vols., Vizianagaram Sanskrit Series, Varanasi, 1895 and 1897. Utpala informs us that Ch. XXVII on the 'Circle of Winds' *(Vātachakra)* is spurious.
9. E.g. fragments of the *Gārgī-saṃhitā.*

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10. After critically assessing the extant data Suresh Chandra Banerji arrives at the conclusion that the text can't be later than the eleventh century AD. *Vide annals of the Bhandarkar Oriental Research institute,* XXXVI, 1955, pp. 2-6. In J. Bently's view *(Asiatic Researches,* VI, p. 576), it is 'an insignificant little work' and 'a most palpable forgery', but there is nothing absolutely to justify this notion. As the original text is not accessible to us, we have here utilised its English rendering by S. P. Raychaudhuri. See his *Agricultural Practices in Ancient India,* Indian Council of Agricultural Research, New Delhi, 1953, pp. 26-48.

11. These manuscripts are I No. 844 of 1884-87, New No. 24, fol. 12 ; II. No. 407 of 1884-86, New No. 26, fol. 45. Both these texts are called *Raudrī Meghamālā* and the colophon of the former represents it as a section of the *Gārgī Saṁhitā (iti Śrī-Gārgī-saṁhiāyāṁ Raudrī-Meghamālāyāṁ garbha-saṁyogaṁ samāptam = iti),* III. 971 of 1886-92, fol. 30. It was copied in Vikrama year 1759 and is styled *Māheśvarī Meghamālā* in the colophon, IV. 973 of 1886-92, fol. 20, called *Bhairav-okta-Meghamālā,* copied in Śaka 1760. These mamuscripts differ but little from each other and are in the form of a dialogue between Śiva and Pārvatī. These suffer from numerous orthographic errors and contain more of astrology than meteorology.

12. Cf. *JRAS,* New Series, 1871, p. 251, fn. 2.

13. *Kechid = vadanti munayaḥ Kārttika-śukī-āntam atītya garbha-divasāḥ syuḥ. BS,* XXI. 5.

14. *Śukla-paksham = atikramya Kārttikasya vichārayet,*

    Garbhāṇāṁ sambhavaṁ samyak sasya-nishpatti-kāraṇam.

15. Ms. No. 844 of 1884-87, New No. 24, folio 13, verses 13ff.

16. *BS,* XXI. 5.

17. *Ibid.,* XXI. 6.

18. Yan = *nakshatram = upagate garbhaś = chandre bhavet sa chandra-vaśāt,*

    Pañcha-navate dina-śate tatr-aiva prasavam = āyāti.

    Ibid., XXI. 7.

    Cf. *Samāsa-saṁhitā* hemistich cited by Bhaṭṭotpala :

    Sārdhaiḥ shaḍbhir = māsaiḥ garbha-vikāsaḥ sa nakshatre.

19. *Sita-paksha-bhuvāḥ krishṇe śukle kṛishṇā dyu-sambhavā rātrau,*

    Naktaṁ prabhavāś = ch-ahāhani sandhyā-jātāś = cha sandhyāyām.

    Pūrv-odbhūtāḥ paśchād = apar-otthāḥ prāg = bhavanti jīmutāḥ,

    Śeshāv = api dikshv-evaṁ viparyayo bhavati vāyoś = cha.

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BS, XXI. 8 and 13.

Cf. Garga's stanzas cited by Utpala on *ibid.*, XXI. 8, where some more details are also provided.

20. Utpala on *BS*, XXI. 9 states that regarding the conception of clouds and their delivery (*viz.* rainfall) we should follow the *amānta reckoning* : *Asmin garbha-lakshaṇe Chaitra-sit-ādāyo māsā vijñātavyāḥ.*

21. *Ibid.*, XXI. 9-12, and Garga cited by Bhaṭṭotpala.

22. Cf. *samāsa-saṁhitā* cited by Utpala on *ibid*, XXI. 7 :

    Paush-āsita-paksh-ādyaiḥ Śrāvaṇa-Śukl-ādayo vinirdeśyāḥ,

    Cf. also Parāśara quoted on *BS*, XXI. 13.

23. *Ibid.*, XXI. 14-18. *Cf.* Parāśara cited by Utpala.

24. *BS*, XXI. 22-24. See also three stanzas from the *Samāsa-saṁhitā* cited by Bhaṭṭotpala.

25. *BS*, XXI. 19-22. Cf. *Samāsa-saṁhitā* stanza cited by Utpala :

    Śastāni Mṛiga-māsāch = chhita-hima-vāyu-megha-kṛitāni,

    Stanita-taḍij = jala-māruta-ghana-tāpāny-atiśo = yaṁ tu Vaiśākhe.

    According to Kaśyapa extracted by Utpala, one should examine cold, clouds, wind, solar and lunar haloes in Māgha and should accordingly predict rain in the month of *Śrāvaṇa* ; lightning, rain, thunder and easterly wind in *Phālguna* augur good rain in *Bhādrapada* ; trees teeming with plenty of flowers and fruits, winds scattering sand, cold, rain and clouds in *Chaitra* foresee profuse rains in *Āśvayuja* ; soft easterly winds and fast southerly winds in *Vaiśākha* are forerunners of rains in *Kārttika.*

26. *Cf.* Utpala-*rudhirād-vaikṛitaṁ vikāraḥ rakta-māṁsa-vasā-ghṛita-tail-ādi-varshāṇam.*

27. *Cf.* Parāśara cited by Utpala on *BS*, XXI. 26 : *Tathā cha Parāśaraḥ. Teshāṁ grahāṇām = uday-āstamay-olkā-nirghāt-āśani-pāta-gandharva-nagara-digdāh-ārkaraśmi-varṇa-vikāra-bhū-chalana-prādurbhāvā varshāsv = abhāvāya.*

28. On *ibid.*, XXI. 26 :

    etad = uktaṁ bhavati, garbhe dṛishṭe yadi paśchād = uktānām = anyatamo bhavati tadā garbho hato yasya samanantaraṁ paśchād = utpāta-sambhavo n-ānya iti.

29. *Ibid.*, XXI. 27 :

    Svartu-svabhāva-janitaiḥ sāmānyaṅ = yaiś = cha lakshaṇair = vṛiddhiḥ,

    Garbhāṇām viparītais = tair = eva viparyayo bhavati.

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30. Utpala on *ibid.*, XXI. 29 : *eteshāṁ madhyād = ekatamena nakshatreṇa sambhūtaḥ śubhaḥ śubha-phalo bhavati sa cha bahūn divasān pushṇāti prabhūtāni ahāni pushṭiṁ nayati ... etad = uktaṁ bhavati, hatas = tāvanti eva dināni na varshati.*

31. *Ibid.*, XXI. 30 :

Mṛiga-mās-ādishv = ashṭau shaṭ shoḍaśa viṁśatiś = chatur-yuktaḥ,

Viṁśatir = atha divasa-trayam = ekatama = rksheṇa pañchabhyaḥ.

Utpala informs us that this rule is an exception to *ibid.*, XXI. 9, *viz.* foetuses formed in *Mārgaśīrsha* and *Pausha śukla* bear but little fruit :

tathā Mārgaśīrsh-ādyā garbhā manda-phalā ity-anena granthena Mārgaśīrsha-jātānāṁ garbhāṅāṁ Pausha-śukla-jātānāṁ manda-phalatā uktā tad = apavādam = āha.

32. *Ibid.*, XXI. 31 :

Pañcha-nimittaiḥ śata-yojanaaṁ tad = arddh-ārddham = eka-hānyātaḥ,

Varshati pañcha-nimittād = rūpeṇ-aikena yo garbhaḥ.

According to Utpala, this stanza also figured in the *Samāsa-saṁhitā.*

33. *Dhūma-jyotiḥ-salila-marutāṁ sannipātaḥ kva meghaḥ.*

34. *BS*, XXI. 34.

35. *Ibid.*, XXI. 37.

36. *Ibid.*, XXI. 35a-36 :

Garbhaḥ pushṭaḥ samaye grah-opaghāt-ādibhi = yadi na vṛishṭaḥ,

Ātmīya-garbha-samaye karakāmiśraṁ dadāty-ambhaḥ.

Kāṭhinyaṁ yāti yathā chira-kāla-dhṛitaṁ payaḥ payasvinyāḥ.

37. *Ibid.*, XXII. 1-3.

38. *Ajānann = ambuvāhasya pāśchātyen-eva vāyunā.*

Rāja-taraṅgiṇī, II, 149.

39. *Tasy-opalabdhir = Bṛihaspateḥ sthāna-gamana-garbhādhānebhyaḥ Śukr-oday-āstamaya-chārebhyaḥ sūryasya prakṛiti-vaikṛitāch = cha.* I 7 I *Sūryād = bīja-siddhiḥ, bṛihaspateḥ, sasyānaṁ stamba-karitā, śukrād = vṛishṭiḥ* I 8 I

Kauṭilya Arthaśāstra, II. 24.7-8.

40. *BS.*, XXIV, 4-8, 11.

41. *Ibid.*, XXIV. 26 :

Nām-āṅkitais = taṅ = udak-ādi-kumbhaiḥ pradakshiṇaṁ Śrāvaṇa-māsa-pūrvaiḥ,

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pūrṇaiḥ sa māsaḥ salilasya dātā srutair = avṛishṭiḥ parikalpyam = ūnaiḥ.

Cf. Bhaṭṭotpala : *etad = uktaṁ bhavati, udak = kumbhaḥ Śrāvaṇa-māsaḥ parikalpyaḥ, prāg Bhādrapadaḥ, dakshiṇa Āśvayujaḥ paśchimasthaḥ Kārttikaḥ parikalpya iti.*

42. *Ibid.*, XXIV. 27.

43. *Ibid.*, XXIV. 9-10 :

Ślakshṇāṁ patākāṁ = asitāṁ vidadhyād daṇḍa-pramāṇāṁ tri-guṇ-ochchhritāṁ cha,

Ādau kṛite dig = grahaṇe nabhasvān grāhyas = tayā yoga-gate śaśāṅke.

Ten-ātra māsāḥ praharair = vikalpyāḥ varshā-nimittaṁ divasās = tad = aṁśāiḥ.

editions of the text.

44. S. P. Raychaudhury. *Agricultural practices in Ancient India.* p. 31. fn. 2.

45. *BS,* XXIV. 12-25.

46. *Ibid.*, XXV.

47. See *ibid.*, chapter XXVIII called *Sadyovarsha-lakshaṇa.*

48. *Kṛishi-Parāśara,* stanzas 63-68.

49. *Jātaṁ vaṁśe bhuvana-vidite pushkar-āvartakānāṁ*

Jānāmi tvāṁ prakṛiti-purushaṁ kāmarūpaṁ maghonaḥ.

Meghadūta, Pūrvamegha, verse 6.

50. Manuscript No. 844 of 1884-87, New No. 24, folio 4a.

51. *Trayas = sāptāhikā meghah aśitiḥ kaṇa-śikarāḥ,*

Shashtir = āyata-meghānām = eshā vṛishṭis = samāhitā.

Vātam = ātapa-yogaṁ cha vibhajan yatra varshati,

Trīn karshakāṁś = cha janayaṁs = tatra sasy-āgamo bhavet.

Arthaśāstra, II. 24. 9-10.

52. V. S. Agrawala, *India as known to Pāṇini,* 2nd revised edn., Prithvi Prakashan, Varanasi, 1963, p. 203.

53. *BS,* XXIII, 1 :

Jyeshṭhāyāṁ samatītāyāṁ pūrvāshāḍh-ādi-saṁpravṛittena,

Śubham = aśubhaṁ vā vāchyaṁ parimāṇaṁ ch-āmbhasas = tajjñaiḥ.

54. *Yena dharitrī mudrā janitā vā bindavas = tṛiṇ-āgreshu,*

Vṛishṭena tena vāchyaṁ parimāṇaṁ ch-āmbhasaḥ prathamam.

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Ibid., XXIII. 3.

Cf. Utapala :

varshe = pi sati bhavatsv = api garbheshu dhāraṅāsv = api satsu yadi pravarshaṅa-kāle na varshati tadā prasava-kāle vṛishṭir = na syād = ity-ataḥ garbheshu idam = uchyate : parimāṇaṁ ch-āmbhasaḥ prasava-kāle vāchyam = iti.

55. See *ibid.*, XXIII. 6-10. Also *cf.* Utpala on *ibid.*, XXII. 3 :

Etad = uktaṁ bhavati, pūrvāshāḍh-ādau prathamaṁ yena nakshatreṇa varshaṇaṁ bhavati ten-aiva jala-pramāṇaṁ loke vaktavyaṁ, n-āpareṇa nakshatreṇa.

56. *Ibid.*, XXIII. 5. *cf.* Utpala : *Prasava-kāle Āpy-ādishu Pūrvāshāḍh-ādishu sapta-viṁśeshv-api nakshtreshu yadi na pravṛishṭaṁ tadā tv-anāvṛishṭiḥ prasava-kāle bhavati.*

57. Kaśyapa cited by Utpala : on *Ibid.*, XXIII. 4 :

Pravarshaṇe yath-ādeśaṁ varshaṇaṁ yadi dṛiśyate,

Varshā-kālaṁ samāsādya Vāsavo bahu varshati.

58. Devala cited by Utpala on *Ibid.* :

Pravarshaṇe yadā vṛishṭaṁ daśa-yojana-maṇḍalaṁ,

Varshā-kālaṁ samāsādya Vāsavo bahu varshati.

59. This is as per the statement of Utpala in his commentary on *ibid.* He cites the following stanza as of Garga :

Āshāḍh-ādishu vṛishṭeshu yojana-dvādaś-ātmke,

Pravṛishṭe śobhanaṁ varshaṁ varshā-kāle vinirdiśet.

60. *Koshṭhāgāre varsha-māmānam = orotni-mukhaṁ kuṇḍaṁ sthāpayet.*

Arthaśāstra, II. 5.7.

61. Palāny-apām = āḍhakaṁ chatuḥshashṭiḥ.

BS, LII. 9.

Cf. Utpala-*yatra mṛittikānām = āḍhakam = apām = ambūṇāṁ chatuḥshashṭiḥ palāni bhavanti.*

The measure *droṇa* is mentioned in *ibid.*, XXI. 32 and 34 ; XIII. 6-9.

62. *Ibid.*, XXII. 2 :

Hasta-viśālaṁ kuṇḍakam = adhikṛity-āmbu-pramāṇa-nirdeśaḥ,

Pañchāśat palam = āḍhakam = anena minuyāj = jalaṁ patitam.

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63. ... *jala-mānaṁ Māgadha-mānena hasta-mite.*

Utpala on *ibid.*, XXIII. 2.

64. *Some viṁś-āṅgul-ānāhe dvi-chatushk-āṅgul-ochchhrite,*

Bhāṇḍe varshati sampūrṇaṁ jñeyam = āḍhaka-varshaṇam.

65. S. P. Raychaudhuri, *Agricultural Practices in Ancient India,* p. 30, fn. 2.

66. Ms. No. 844 of 1884-87, New No. 24, folio 1b, verse 30.

67. *Dve mā bhikkhave, vassūpanāyikā purimikā, pachchhmikā't aparajju-gatāya Āsalhiyā purimikā upagantabbā, māsa-gantāya Āsālhiyā pachchhimikā upagantabbā. Imā kho bhikkhave, dve vasūpanāyikā'ti.*

68. The original Sanskrit name must have been Kshaṇā.

69. For collections of Khānā's proverbs, see Kali Prasanna Vidyaratna (ed.), *Khānār Vachana* (Bengali), Calcutta, Bengali saṁvat 1361 ; Pashupati Chattopadhyaya (ed.), *Jyotisha-sāra Khānār Vachana,* Calcutta.

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COPPER SMELTING AT THE HINTERLAND OF ANCIENT PORT CITY TAMRALIPTA

AMALENDU BANERJEE

Riding on a train of the South Eastern Railway from Calcutta to Tatanagar, a traveller will be delighted by the sight of a long chain of smoky blue hills standing hand in hand as the sentinels of time, just as he crosses the border of West Bengal a little after Gidhni station. This chain extends upto a length of almost 200 km. in a south-east to north-west direction commencing near the trijuction of West Bengal, Bihar and Orissa at Baharagora on the national highway no. 6 (Bombay Road) and terminating around Duarparam of Seraikela State. The individual names of these hills are : Badia, Surda, Ruam, Siddheswar, Turamdi, Bayanbil etc. and they are the silent spectators of the birth and flowering of a Chalcolithic culture in this part of India at the dawn of civilisation.

The entire region is dotted with hillocks with cover of Sal forests and is known as "**JANGAL MAHAL**" comprising of the eastern part of Singhbhum district in Bihar, the whole of Purulia district, western part of Bankura, west and north west portion of Midnapur district in West Bengal. At present this terrain is inhabited by Proto-australoid group of tribes called Kols, Mundas, Santhals, Koras, Lodhas, Kherias etc. and from time immemorial the ancestors of these tribes have been grazing in this area leading nomadic lives in pre-historic times.

Large deposits of copper ores have been detected in the area of the foothills quoted above during the latter part of the last century whereafter copper prospecting started at the Rakha and Musaboni mines and a modern copper smelting factory was gradually established at Ghatsila on the bank of the river Subarnarekha, which has been working successfully since then using the local copper ores. This large copper belt of Ghatsila also attracted the aboriginal tribes at a distant past *i.e.*, may be about 7000-8000 years back they noticed those copper ores and also probably free copper nodules or lumps lying scattered here and there. Being used to collect beautiful coloured semi-precious stones as ornaments, they did also collect these brown and red nodules of copper and in course of time they tried to shape them into various forms by hammering and beating with their stone tools ; gradually they succeded to create flat axes, spear heads, arrow-heads and small plates by this process, imitating their stone tools of daily use for hunting or household jobs. Thus

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started a silent revolution when these aboriginal ancient tribes introduced the metal copper along with their long-established stone tools and thus the human civilisation took one step forward by including metal in their inventory of useful articles for the first time.

Fig. 1 outlines the region of "**JANGAL MAHAL**" under study.

Gradually they noticed that this kind of beating the copper into various shapes (technically known as "cold working") made the articles brittle, but if a little heat is applied by burning firewood (which was abundantly available), the metal became more malleable and could be shaped much more easily. Therefore they created small ovens where the metal was heated to a required softness and then the same articles were shaped in a much more comfortable manner. Still they were far away from copper smelting, which was a complex process.

In the meantime the old palaeolithic stage was over and human nomads started living in small settlements near rivers or streams, where they introduced the process of cultivation and production of food which needed jars for storage which compelled them to make pottery vessels, at first by sun-dried clay and later by burnt clay in an oven which needed quite a high temperature created in a closed environment by blowing air with leather blowers. Perhaps accidentally in such a hot oven some day a rock of copper ore got melted and small pieces of copper were noticed with great surprise and thereafter they started experimenting with copper ores in crudely built furnaces. Gradually these furnaces improved with time and the tribes learnt the art of smelting copper ores.

The process developed into a full-grown smelting outfit which was as follows :

A cylindrical terracotta chimney was built with wall thickness of about $2\frac{1}{2}''$ to withstand high temperatures ; on one side of the chimney on an upper level entered a small diameter terracotta pipe to let in air from leather blowers whereas at a much lower level existed another big diameter terracotta pipe to lead out the scum or slag material. The ore was cleaned and powdered by a hammerstone in a quern-like stone bowl and thereafter probably concentrated and finally mixed with charcoal powder intimately and then burnt in fire inside the furnace. To raise the temperature, air was constantly blown through the upper tube ; thus the oxide ores were reduced to copper by charcoal whereby carbon dioxide gas escaped through the top of the furnace mouth ; the molten copper being heavy, accumulated at the bottom, while the scum or molten slag was led out through the thick pipes. This process is known as the "Carbon reduction process" and this is the most ancient smelting method which was also used in Iraq when they first started copper smelting.

The slag is the useless black residual lumps from which almost the entire copper has been extracted out and therefore they are dumped on the outside of smelting furnaces.

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In case of sulphide ores, they are to be roasted at a temperature of about 500°C in order to drive out the sulphur and other volatile gases. Thereafter the ore is smelted in the usual method.

Fig. 2 illustrates a typical ancient smelting process.

Once the art of smelting copper ores was well mastered by the ancient tribes, they started building such furnaces on a very wide scale and the entire foothills region of Singhbhum district in Bihar gradually became the centre of smelting activity where a large portion of the tribal population remained engaged. The indelible mark of this activity is still visible in the region and the present author himself has noticed such numerous slag dumps below every hillock at Badia, Surda, Ruam, Siddheswar etc. etc. reminiscent of the past humming activity.

The copper thus smelted from the local copper ores was used to cast or forge a large number of implements, such as spearheads, arrowheads, different design of axes, swords, knives as well as household utensils like bowls, saucers, plates, jars, decorative pieces etc. A wide possibility of making durable articles of every description opened up to the copper smelters, which were hitherto not possible in the stone ages ; they were glad to utilise the opportunity on a full scale while trade and commerce began to flourish because the surplus production of copper and its implements was transported to urban centres through riverine routes for local sale as well as export to foreign countries.

Thus when copper invaded every sphere of human activity, this epoch was named by the present historians at the "Chalcolithic Age", which means a combination of copper and stone cultures ; this is to be remembered carefully that collecting copper ore, building furnaces and smelting the ores was a complicated and elaborate process in those early days involving a large number of people and quite a lot of investment resulting in a very high cost of the copper thus produced. Naturally therefore, it was impossible for the poor tribal people to use copper implements in individual households ; therefore, they had to remain content with their old stone implements ; even the copper workers had no other option. Costly copper and its articles were manufactured and traded in urban centres or other local markets ; thereby the stone age articles could not be totally discarded for quite a number of centuries to come and that is why this age is know as "Chalcolithic Period". Common people had yet to wait much longer to be familiar with copper articles.

During the whole of last century, many such ancient copper articles were discovered buried at various places under earth in U.P., Bihar, Orissa and West Bengal. They were found while digging wells, canals or tilling land ; accidentally, they were picked up by villagers and since then they have been kept preserved at different museums, because experts

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are sure of their antiquity and they think that most probably copper from the Singhbhum deposits had been utilised to manufacture them.

Fig. 3 illustrates some of the ancient copper weapons recovered from underground.

The antique weapons such as axes, spearhead etc. thus discoverd at various places closely resemble the stone articles depicted at various cave walls and rock shelters in this region and thereby archaeologists have come to the logical conclusion that the makers of the copper articles are the descendents of earlier aboriginal tribes who have imitated the original stone tools in copper.

The ruins of the ancient copper smelting furnaces lie scattered till to-day in every conceivable place, *i.e.*, open meadows, hillside, deep forests etc. A common feature is a raised ground by the side of a stream where the furnaces are almost obscured by overgrown scrubbery and a big tree on the furnace chimney itself (may be, copper traces help the growth of such big trees). A huge dump of copper slags exists at every furnace site which makes it easy to recognise. A British geologist, Mr. V. Ball had explored the area in Singhbhum district for geological survey and availability of minerals and he had detected many such furnace sites around 1866-68. He has left his report in the "Proceedings of the Asiatic Society of Calcutta, July, 1969".

Mr. V. Ball of course did not perhaps undertake any exploration work in the adjacent district of Midnapur in West Bengal and therefore his report is silent about this part of the country.

The present author was bent upon finding out the extent and intensity of copper smelting activity in Midnapur and therefore he undertook a very extensive exploration in the North-west of Midnapore adjacent to Singhbhum, because it was quite logical to think that such activity must have spilled over to nearby areas ; moreover, it was quite likely that veins of copper ores must have run underground from the original Ghatsila or Rakha mines in all directions and it was expected that at a distance of about 25 miles in North-west Midnapur some copper deposits might have been available and if so, there is no reason why the ancient tribes living in Midnapur should not have engaged themselves in similar profitable activity.

Jhargram is a sub-divisional town in Midnapur district situated on the south-eastern railway running from Calcutta to Bombay and there is a metalled road from Jhargram to Bankura passing via police station Belpahari through north-west Midnapur into the adjacent Bankura district and on this road at a distance of 55 km. from Jhargram stands a village called "TAMAJURI". In this name, TAMA means Copper and JURI may signify binding or connection. Therefore, the name by itself is very suspicious and I have been suspecting

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for many years that this village had something to do with copper and therefore this is the most logical spot for a first assault.

After arrival at the village, enquiries were made with the local villagers and in the open rugged field strewn with rocks of various sizes on the way to the next village (on the western side), some black lumps of copper slag were detected by the side of a driedup ditch ; but the quantities of slag available were small and it did not warrant existence of any smelting furnace ; on a second visit at a nearby meadow on the eastern side of Tamajuri, we ascended an elevated land where we discovered a broken furnace mouth with cylindrical Terracotta Chimney and copper slags scattered all round ; it appeared that the rest of the furnace was buried underground. Again half a kilometer north, we discovered another furnace chimney on an elevated ground by the side of a hilly stream still full of water flow amid bushes all around. This furnace appeared to be well-preserved and a small portion of lime-gravel platform was still visible whereas an ancient stone axe was found lying on the top of the furnace. A close examination showed two more furnace mouths at the same spot, which might have been older ; this place in the forest is known as "KARELATA".

Fig. 4 illustrates the smelting zone of Midnapur.

Once Tamajuri was detected as a centre of copper smelting activity in Midnapur, we were delighted and our search was gradually intensified and during the course of our subsequent continuous visits for almost the next 5 years, a large number of furnaces and smelting sites were spotted. A little further north of the site at Karelata beyond the hilly stream quoted above, dozens of furnace chimneys were located in deep jungles ; some of the terracotta chimneys were found blackened perhaps due to long continuous use. As usual, most of the chimney sites were strewn with black lumps of copper slag. We were told by the villagers that in olden times (how old, nobody knows), a community of copper smelters were living near the hilly stream and they were the builders of these furnaces. Another information was very ominious : copper mining was being carried out at a place about 2 km. east. This sounded very logical and because of this availability of copper ores nearby, a smelting industry grew up here at ancient times and the hilly stream provided continuous supply of water for the community. We found also a host of crude stone tools near every smelting site and if the nature of tools are any indication of the antiquity of these sites, the crude palaeolithic tools should be evidence for this smelting culture to be several thousand years old.

Thereafter we kept on searching for the next 5 years, at first at the nearby villages around Tamajuri and then further north and south ; the following nearby villages within 5-6 km. of Tamajuri were infested with similar smelting sites : Majugora, Debadi, Rajbasha, Shahebdahi, Shaluapara ; they yielded numerous sites and it was the same picture everywhere : A raised ground, blackened & broken terracotta chimney, a large number of

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small, medium & big lumps of copper slag and a ditch by the side, overgrown scrubbery and a big tree on the chimney ifself. Sometimes the chimneys were found in the open field where agriculture was in process and the chimneys were levelled to ground by the plough, but slag heaps were visible.

The artifacts found at these sites include various stone tools like hammerstones, grindstones, hand axes, scrapers, quern-like big and small stone bowls along with narrow and wide terracotta pipes. The stone tools are indicative of the true Chalcolithic culture whereby stone implements were still in use but copper had been already introduced. The narrow pipes were meant for letting in air into the furnace from the leather blower while the wide pipes were used to take out the molten scum or the slag which were dumped outside as useless material. Metallurgical analysis of a sample of such a slag showed that almost the entire amount of copper had been extracted from an oxide ore having a copper content of not more than 3% and this was done by carbon reduction process by burning charcoal mixed with copper ore at a temperature of around 1,100°C. At some of the furnace sites half burnt charcoal was also collected by us.

Another strange stone implement was also detected from several sites : they are longish flat and thin stone slabs and look like graduated scales, because graduations had been created by straightline scratches at regular intervals. It appears that they were most probably used to measure the level of molten mix in the furnace. Probably they were held by hand vertically with a piece of sack cloth and then dipped into the hot metal to check the level. In one of such stones we found impression of textile.

Evidences also suggested that the community of smelters did actually reside near the smelting sites and the ditches or hills streams by the smelting sites explain the requirement of water by the residents. Moreover, potteries and lots of potsherds and sometimes unbroken terracotta utensils of daily use were discovered by us near the smelting sites.

Searching for the smelting sites continued for almost 5 years and the final survey result shows that the police station Belpahari could be called almost the southern limit of this smelting zone and almost the entire north-east portion of the Midnapur district lying beyond Belpahari is scattered with these smelting sites. We surveyed almost 50 villages under this P. S. and all to-gether we have counted about 500 smelting sites. The last point at the north-west is Banspahari at the border of Purulia district and on the western side the smelting zone goes through Odalchua village upto Dhobikacha whereas on the north side it goes upto the Tarafeni barrage point.

A metallurgical analysis of some copper slags found in this region showed that copper oxide (or Cuprite) ores were smelted in furnace by the charcoal reduction process and almost

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the entire copper of the mother ore was extracted skilfully ; the original ore perhaps had a copper content of maximum 3%. The ancient process was very cost-intensive and technically inefficent because of heat wastage ; thus the produced copper was very costly and the poor tribal people could not dream of using copper implements which were naturally meant for rich people and therefore they were transported to nearest markets and urban centres for trading, because all kinds of copper products used to fetch lucrative prices. Throughout the world over, there was a high demand of copper and its implements (weapons & household articles both) because this was the first metal human beings mastered for use, after the neolithic age was over. As a result, the whole of Singhbhum district in Bihar (where there was abundant supply of good copper ores having copper content of 30-35%) and north-west portion of Midnapur (Where the supply of ores with low copper content was available) was humming with smelting activity just for the purpose of trading.

Quantitatively of course, yield of copper metal from such a single smelting furnace in a single charge would not have been more than 150 to 200 gms., according to metallurgists and therefore, the daily production of copper for each furnace would not exceed 500 gms. But if we consider the total monthly production of about 1,000 furnaces (Singhbhum and Midnapur taken to-gether with nearby districts of Bankura, Purulia etc.), then it will amount to several tons. Several tons of copper or its implements would have fetched a very attractive price from urban centres in those ancient times, because these were exported to foreign countries.

The existence of the port city of Tamralipta in the present district of Midnapur was never in doubt, because the Greek Geographer Ptolemy had already mentioned it as "Tamalite" in the 2nd Century A.D. and also he stated the latitude and longitude of the city.

In the 1st Century A.D., Roman historian Pliny has given a list of articles exported from Tamralipta and Ganga Port in this region, mentioning copper as one of the articles. In the 4th Century A.D., the Chinese traveller Fa-hien and in the 7th Century A.D., another Chinese traveller, Hieuen Tsang had both given description of the port city. Fa-hien had observed many sea-going vessels lying anchored at this port, while Hieuen Tsang mentioned that several trade routes on land had teminated on this city and there were many precious items brought to the port for export. Although he did not mention copper specifically, but "preciousness" in that ancient period could surely be assigned to copper as well as precious stones which were being mined in South Bihar (Magadha) and were also brought to this port for export.

In those days the cheapest and safest form of transport was river boats because the bullock carts used on land routes took long time and had the chance of being plundered by robbers. Hieuen Tsang had stated that the perimeter of Tamralipta Kingdom was more

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than 200 miles. Historians indicate that the present town of Tamluk probably bears reminiscence of the ancient Tamralipta due to various reasonings, although the exact location has not been pinpointed till to-day. Assuming Tamluk to be the old Tamralipta, the entire region of Singhbhum and North-west Midnapur could be counted as included in the Kingdom of greater Tamralipta region and therefore, the hinterland of the port city, to be exact ; from this hinterland, all the items produced converged into the port through the land routes mentioned by Hieuen Tsang as well as by the riverine transport in country boats to be exported to foreign countries, *i.e.*, the Roman markets, Middle East countries as well as in South-east Asia, Malayesia, Indonesia, Java, Sumatra etc. Rivers used were Kansai, Tarafeni, Dulung and Subarnarekha. Tarafeni, Dulung and Subarnarekha pass through the smelting zones. Tarafeni is connected to Kansai whereas Dulung also falls into Subarnarekha. Both Kansai and Subarnarekha could bring the boats very close to the port city and the remaining few kilometers were perhaps negotiated in bullock carts. We can thus visualise how the smelted copper produced in the hinterland (Midnapur, Singhbhum etc.) found its way into the Tamralipta harbour and thereafter were carried in ships to foreign countries. It is this foreign trade which was mentioned by Pliny and which brought lots of gold from Rome in exchange for payment of exported goods and thus the Bengalee merchants of those days grew more and more wealthy, reflecting the social change in the terracotta figurines of ladies of that age clad in profuse gold ornaments. Thus in a way, copper smelters of Midnapur earned lot of gold for the rich merchants, although they themselves remained in poverty in tribal areas.

Fig. 5 transport of smelted copper to Chalcolithic spots and Tamralipta.

"Tamralipta" literally means "smeared with copper" (Tamra = Copper, Lipta = smeared). Therefore, the origin of the name given to the city must be traced to the smelting of copper and this is the strongest evidence that the port grew up at first as a copper trading centre for the copper produced at the hinterland ; thereafter other items & products of course joined the bandwagon to enrich the port, but the copper was definitely the first item and from all other evidences it appears that first lots of copper perhaps arrived here for trading around 1,500 B.C. and this is the point of time when the port started to grow. The copper articles excavated out in the Chalcolithic culture of Ajoy Valley in West Bengal are almost of this period and it is certain that they came from the smelting zone. Some of the furnaces in this region appear to be very old and perhaps they correspond to this period.

It is futile to search the origin of growth of Tamralipta elsewhere other than the copper smelted in Singhbhum and Midnapur ; besides, the copper artifacts dug out in the Ajay valley have been dated around 1,400 B.C. or earlier. Therefore the strong indirect evidence points to the fact that the port grew earlier than this time and approximately 1,500 B.C.

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seems to be logically the period of establishment of Tamralipta as an international trading centre of copper.

The Saga of ancient copper smelters will remain incomplete, if two of the major copper production centres are not described. One of them is a village called "Kechonda" : Driving 10 km. north of Belpahari market along a dusty road, one reaches the barrage on the river Tarafeni ; 2.5 km. further south-east on the bank of the river, stands the village Kechonda also about 2 km. long with a sizable population of potters, farmers and people of other professions. In the meadows on the western side of the village stands a conical mound of ancient ruins strewn with broken bricks of various sizes, which appears to be an ancient Buddhist "stupa" built in post-Gupta period between 9th and 11th Century A.D.

Kechonda village assumes an overwhelming importance in the light of ancient Tamralipta port, because a large number of ancient copper slag dumps of copper smelting furnaces exist along the river bank extending from the barrage point to a distance of several kilometers. The river bank is not a continuous land mass because the annual floods bring in heavy onrush of water from the uplands of north west Midnapur during monsoon months ; this yearly flood breaks the bank at many places creating crevices and ravines through which the water enters. Thus the furnaces located on the river bank have mostly been destroyed leaving only the slag dumps above and ashes below the ground level all along the river side. Only one round furnace chimney could be located and others seem to have disappeared completely or lie buried under the slags deep underground. In several locations near the dumps numerous pieces of pottery (household utensils) are visible, which surely indicate the presence of people who were engaged in copper smelting. Many terracotta pieces have been collected by this author and they were parts of household articles, some of which were beautifully ornamented. The colour and ornamentation of the potsherds suggested a post-Gupta period when the copper smelting industry was at its zenith and reached a full-grown stage.

During winter and the summer months the water dries up and the level comes down, when the river does not remain navigable but during the monsoon floods the appearance undergoes complete reversal and the water level seems to be bursting at the seams and that has necessitated the construction of a barrage to control the flow of water for at least 4-5 months during this period when the river remains fully navigable. The present author feels certain that the smelting process was being kept running through the entire dry season and the production of copper was accumulated ; as soon as the first floods came, the smelters started transporting the accumulated copper in river boats along Tarafeni and Kansai upto Tamralipta where it was traded or loaded in ships for export to foreign countries. This kind

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of activity continued till the existence of the port city of Tamralipta and the large number of copper slag dumps on the river bank at Kechonda stand mute evidence to a period of unprecedented glory.

A photograph of the river front at Kechonda Fig. 6F shows the slag dumps strewn over the wide area.

The present author has discovered another similar site at a village called PIPLA very near to Ghatsila ; an offshoot of the river Subarnarekha has reached to a spot where the flow has been blinded without any continuity. This village can also be reached by the national highway No. 6 (Calcutta-Bombay Road) and then travelling further along dusty interior zig-zag roads to reach the river bank ; best way is to start from the railway station GALUDIH in a jeep and drive for about 18 km. to reach the diversion point. Please see the attached sketch. The river bank here also is found dotted with smelting sites, although the pieces of slag found in the dumps appear to be slightly different in composition ; most probably, the local copper ores had higher contents of copper and therefore yield of metal was also much better ; that might be the reason for difference in appearance.

Since the smelting was carried out just by the side of a big waterway (the river Subarnarekha), it was very easy for the smelters to transport their product in boats to urban centres, as we mentioned in the case of Kechonda. A scientific analysis of the slags will establish the nature and quantity of yield at each furnace and a controlled excavation may determine the shape of the furnace and the exact smelting process whereas a carbon dating test of the charcoal pieces found in various stages will give out a tell-tale story of the antiquity and how these furnaces were linked to the Port of Tamralipta via the river Subarnarekha.

Local villagers near Tamajuri did actually unearth an old smelting furnace while digging earth for their own requirement and the present author, by chance was lucky to collect some charcoal samples from various layers of the furnace and these samples were sent to the Palaeobotatical Institute of Lucknow for carbon dating test. Their report is still awaited.

It appears from all smelting sites of Midnapur that they had been used and re-used for a long time (may be for 2-3,000 years), because just by the side of the actually working furnace, older furnace mouths were detected which seemed to be defunct for quite a long time. In Rajasthan at Zarwe the British Museum while digging for scientific study of the smelting furnaces, found that they had been used and re-used for almost 3,000 years.

A thorough scientific study of the whole smelting region can only provide the full story of smelting activity and other phases of trading links with the ancient port city of Tamralipta.

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The villagers of TAMAJURI, while digging earth for their own requirement, excavated out one complete smelting furnace at Karelata and the present author had the opportunity to examine the same and the following measurements were found :

Total height from the lowest point = 2.5 ft.

Bottom diameter = 1.5 ft. (approx), tapering to a top diameter = 1 ft.

Terracotta wall thickness = 2.5″ to 3.″

A 2″ diam. hole found at the bottom, probably mean for taking out molten copper metal.

A photograph of the furnace is given in Fig. 6E.

Several stone tools along with pieces of broken terracotta pipes and lots of various sizes of charcoal pieces (burnt & half-burnt) were collected from the furnace hole. A large number of copper slags were also in existence as usual.

ANTIQUITY OF SMELTING SITES

The question of antiquity of the smelting sites in Singhbhum had been discussed in the reports of British geologist, Mr. V. Ball in 1869 and another British geologist and mining expert, Mr. E. F. O. Murray in 1940, both of whom had explored the Singhbhum region extensively, but did not perhaps penetrate into adjacent Midnapur ; their reports have been preserved in the records of the Asiatic Society, Calcutta and therein no detailed information for Midnapur is available.

Mr. V. Ball's conjectures mainly depend on hearsays from local villagers and he comes to the conclusion that these furnaces were built by a sect of the Jainism religion, called "SERAKS" who were very intelligent and resourceful people with diligence. Many architectural and scluptural works in the area are attributed to them and local people had informed him that the furnaces might be as old as one thousand years. Mr. Ball consulated the reputed anthropologist, Dr. John Dalton who told him that the Seraks were driven out by the Kol tribes about 2,000 years back and the Kols continued the smelting process. Therefore, the age of the furnaces seems to be contradictory.

Mr. Murray has tried to discuss the matter on the basis of artifacts found in the region, such as Palaeolithic & Neolithic tools, copper coins of the 3rd to 5th centuries A.D., burial urns & other pottery as well as tradition and history, but in no case the antiquity could be pushed back beyond 5th or 6th century B.C.

Main difficulty for both Mr. Ball and Mr. Murray was that they did not possess any scientific test results, *i.e.*, no carbon-dating was known at the time and therefore they tried to arrive at their conclusions from other facts.

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However, fortunately for us, two decades later, the archaeological department of the Govt. of West Bengal did carry out excavation work in the valleys of rivers Ajay, Kunoor and Kopai which are not far from the Midnapur district or the anticipated location of the ancient Tamralipta port. Surprisingly, a very large number of artifacts have been dug out, including articles of copper which have been attributed to an widespread Chalcolithic culture very adjacent to the smelting zone of Midnapur as well as ancient Tamralipta. The spread of this Chalcolithic culture goes as far as the southern most part of West Bengal, along the river Ganges.

The copper objects have been dug out from ground layers, some of which have been dated by radio carbon test (carried out on organic matters) and the oldest date has thus been obtained around 1,500 B.C. for some of the copper articles found in the Valley of Kopai.

Mr. P. C. Dasgupta, the former director of the the Archaeological department has confirmed this antiquity of the ancient copper objects in his publication "The Excavation at Pandu Rajar Dhibi".

All the Chalcolithic sites thus reported in this publication are within a belt of 50-100 miles of the smelting zone of Midnapur. Moreover, there were trade routes on land passing from Magadha (South Bihar) to the ancient port of Tamralipta through this region, as mentioned in old literature as well as by the Chinese traveller, Hieuen Tsang. In addition, the rivers, Dulung, Tarafeni and Subarnarekha were a boon to the ancients who could bring the smelted copper or articles thereof to the ancient port in boats through these rivers.

Therefore, all the indirect evidences are present which help to conclude that the smelted copper did actually arrive at Tamralipta regularly and also were taken to the Chalcolithic sites mentioned above. We cannot dream of copper coming from distant Rajasthan mines (about 1,000 miles away or more) in such a distant antiquity (*i.e.* 1,500 B.C.), because almost the whole country was covered with thick and deep forests everywhere at that time and no riverine routes from that region were evident. Therefore, the natural conclusion would be that local copper ores were regularly smelted at Singhbhum and Midnapur and copper articles were also made which were brought to Tamralipta and sold locally at many different places. From Tamralipta they were exported to foreign countries.

Since copper articles were made around 1,500 B.C., there is no harm if we conclude that the smelting furnaces are definitely at least that much old or still older. If export business is much more lucrative, people would naturally bring more and more copper for shipping at Tamralipta.

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All the circumstances thus seem to point to the birth and growth of Tamralipta as a copper trading centre which flourished thereafter as a major international port mentioned by the ancient historians and travellers. It appears that Tamralipta kept its mark in history from around 1,500 B.C. to about 1,000 A.D. and thereafter it was heard no more.

A thorough scientific probing into the whole of smelting zone in Midnapur will need exhaustive digging work at many furnaces to determine the continuity of smelting process over a long period and also chemical analysis of the slags which will establish the impurity pattern and thus show the actual mines from where the ores had been brought for smelting.

PLATES OF THE FIGURES

Fig. 1. JANGAL MAHAL along with Midnapur district of West Bengal.

Fig. 2. A typical ancient copper smelting process.

Fig. 3. Ancient copper weapons and implements collected by villagers at various places.

Fig. 4. Smelting Zone of Midnapur.

Fig. 5. Transport of smelted copper to Chalcolithic spots and Tamralipta.

Fig. 6. (A) Stone tools found at smelting sites.

(B) Broad terracotta pipe fragment probably used for outflow of molten slag.

(C) Pottery pieces found near smelting site.

(D) Graduated long stone slab probably used as level gauge.

(E) A dug out typical ancient copper smelting furnace of Midnapur.

(F) River front at Kechonda showing slag dumps.

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BUDDHIST MONASTIC MEDICINE AND ĀROGYA-VIHĀRA

KRISHNENDU RAY

The Buddha is known to have prescribed for the religious life in the *Saṁgha* four resources[1]. Among these two were medicine[2] and *vihāra*[3]. The sickness of the hot season attacked and physically disturbed the Bhikkhus and also snake-bites incidentally occured[4]. This necessitated the use of medicine in the *Saṁgha*. The prescribed medicaments were ghee, butter, oil etc. These must be used within a period of seven days during which they might be stored up[5]. The Bhikkhus were asked to nurse their fellow coenobites[6]. The act of nursing was thus institutionalised. Various kinds of medicaments were prescribed and used, such as turmeric, orris root, *nimba,* fruits like *vidaṅga, āmalaka* etc. for imparting appetising flavour to foods[7] ; *vaṁśapattri, saggulasa* (resin), *rasa* oinment, *kapalla* (soot taken from the flame of a lamp) for the disease of the eyes[8] ; the ashes of burnt-rice for constipation, cows' urine decoction for joundice etc.[9] These were used evidently to ward off pain and to maintain health. It may not be out of focus to briefly cite a few cases of treatment in the *saṁgha.*

Venerable Pilinda-vaccha[10] was attacked with a head-ache (*sīsābhitāpo*). The treatment he received for it included oil-use, *natthu-kamma*[11], sniffing up of aroma through pipes[12]. For removing rheumatism he was advised to take a steam-bath[13] and hot baths[14] in water with medicinal herbs. Another monk named Belaṭṭhasisa[15] had a disease of thick scabs. He was advised to use *cunam* (lime), dry dung, clay and colouring matter[16].

Medical services were also available from lay persons to the *vihāra*. A physician named Ākāsagotta performed a surgical operation using a lancet on a certain Bhikkhu who suffered from a fistula[17]. A devout laywoman Suppiyā[18] (of Benares) was so liberal to offer medical services to the *vihāra* that once she cut a piece of flesh from her own thigh and gave it to the sick Bhikkhu who needed a purgative and some broth[19].

However, Pilinda-vaccha's treatment could not bring recovery for him. The result of Belaṭṭhasisa's treatment is not known. Equally unknown is the result of fistula operation[20] by Ākāsagotta.

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But it is not the case with Jīvaka Komāravaccha[21], the most renowned lay physician of the Buddha's time. His first[22] successful treatment was on a seṭṭhi's (merchant, of Sāketa, modern Ayodhya, U.P.) wife who was attacked with a seven-year long head disease. Jīvaka removed her disease by pushing through her nose one *pasata*[23] of ghee with various drugs and she came to health. Next he successfully relieved the Magadhan King Seniya Bimbisāra (*c.* 545 B.C. — *c.* 494 B.C.) of his fistula by one anointing. He restored to health a *seṭṭhi* (of Rājagṛha > Rajgir) who suffered from a seven-years old disease in the head. He made operation on the seṭṭhi's head[24]. His another successful intestinal[25] operation relieved a seṭṭhi's (of Benares) son of his indigestion and the son regained his health. Jīvaka cured the King Pajjota (Pradyota) of Ujjeni (mod. Ujjaini, 23°11′ N, 75°51′ E, M.P.) of his jaundice[26].

However, proper treatment and cures as well as successful surgical operations made him a celebrity as brilliant as the stars. The young doctor was accepted as the most efficient physician to King Bimbisāra and his seraglio and the fraternity of Bhikkhus with the Buddha at its head. Jīvaka was one of the chief partisans of the Buddha at the court of Rājagaha[27].

Once the people of Magadha (South Bihar) were attacked with five such diseases as leprosy, boils, dry leprosy, consumption and fits. Then they accepting the *Pabbajjā* ordination joined the *Saṁgha* with a view to be nursed by the Bhikkhus and cured by Jīvaka. The Bhikkhus nursed them and Jīvaka cured them and in doing so the Bhikkhus who had to nurse many sick Bhikkhus solicitated food and medicine from lay people[28].

Therefore at least it appears that the Buddhist *Saṁgha* had provisions to offer medical services to more than one sick Bhikkhu *Gilānapaccayabhesajja*[29] (Sk. Glānapratyayabhaiṣajya) meaning requisite medicine for sick person[30]. In the *Saṃyutta—Nikāya* (dated to the period earlier than the second and third quarters of the 3rd cent. B.C.[31]) there is a reference to the sickward attached to the *Kūṭāgāraśālā*[32] in the *Mahāvana* (Great Forest) near Vesāli (mod. Vaisali, Bihar). So, it appears that there was a structure in the monastery compound, which was set aside for the care of the sick Bhikkhus.

With these preliminaries on the medical aspect of the Buddhist *Saṁgha* let us concentrate on the epigraphic evidences in this regard. Nagarjunakonda (Krishna valley, dist. Guntur, Andhra Pradesh, 16°31′ N, 79°14′ E) inscriptions of the Ikṣāku rulers (3rd-4th cent. A.D.) refer to *Vihāra - mukhye Vigatajvarālaye*[33]. The line refers to a chief monastery (*Vihāramukhye*) which contained *Vigatajvar-ālaya*. Now, the word *vigatajvar* has been meant as a person recovered from a fever. And the next part *ālaya* may refer to a shrine that existed within the chief monastery. So, the expression *vigatajvarālaya* has been suggested to have been used in the sense of a sanatorium for the convalescence of sick persons[34].

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The existence of another monastery-cum-sanatorium has been reported from a number of inscribed seals and potsherds found in the excavations at Kumrahar near Patna. The seals and potsherds concerned belong to the periods IV and V dated to *c.*300 A.D. to 600 A.D. The seal bears the Inscriptions :

L. 1. *Śri Ārogya—Vihārebhi*

L. 2. *Kṣusaṁghasya*[35].

The inscriptions refer to the monastic community in sanatorium monastery. This is the first seal (size 1.65″—1.3″oval shape) to be discovered of a monastery-cum-sanatorium. And of the two inscribed potsherds, the first bears the inscription.

(Ā)rogyavihāra and the second shows—*(Dha)anvantareḥ*[36]. The inscriptions mean—in the sanatorium monastery of Dhanvantari[37]. Dhanvantari might have been the title of the presiding physician who, if so happens, apparently with a team of physicians, used to render his medical services in the health house.

The structures of the *Ārogyavihāra* have also been reported. Two complete big rooms have been found from the period IV. The eastern most apartment was approximately measured at 20′ × 10′ and the apartments further west were 21′6″ × 10′, 10′8″ × 10′ and 21′ × 10′. Southern and northern walls extended further both to the east and the west and there must have been more rooms ; but their measurements could not be ascertained. The width of the walls was 2′8″ usually and the average brick size was 15″ × 10″ × 2″. No doors and windows could be traced. The brick-made floor was 3″ to 6″ thick.

From the period V one big room has been found (Trenches C, D, G, and H), which has been measured at 18′ × 12′6″, its brick-breadth was 10″ to 10.5″. In the Trenches H, R, S and T have been found four small rooms. Of these the northern room was measured at 8′ × 4′6″, the sourthern room was 8′ × 4′9″. The third Room (Trenches R, S) was 10′6.5″ × 6′ and the fourth room (Trenches R, S, and T) was 10′6.5″ × 5′10″. The thickness of the wall between the two rooms was measured at 13.5″[38]. Apparently, the *Ārogyavihāra* in question was a large one with a number of spacious rooms for the sick Bhikkhus.

The art of healing in the Buddhist monastic organisation (*Saṁgha*) might have introduced the learning of the art of medicine in the Buddhist monasteries, as for instance, *cikitsāvidyā*[39] in the Nālandā *Mahāvihāra* of the Imperial Gupta period (4th cent. A.D.-mid 6th cent. A.D.). Medical assistance on behalf of the Buddhist *vihāra* stressed the practical virtues of healing sick persons and gave rise to a system of Buddhist monastic medicine. To that system belonged the *Ārogyavihāra* under discussion.

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1. Müller M.F (ed), *the Sacred Books of the East* (cited below as *SBE*), Vol. 13, pt. I, Reprint, Delhi, 1996, pp. 173-74 ; *Mahāvagga,* I. 30.4.
2. *Ibid,* I. 30.4.
3. *SBE*, Vol. 17, pt. II, Reprint, Delhi, 1990, p. 119, VI. 33.2 ; cf *SBE*, Vol. 13, pp. 173-74, I. 30.4, f.n. 1 and pp. 250-51, II. 8.1 ; cf *SBE,* Vol. 20, pt. III, Reprint, Delhi, 1991, p. 158, VI. 1.2. The term *Vihāra* has variously been defined. It means a habitation for a Buddhist mendicant etc. (*SBE*, Vol. 13, p. 173 ; *SBE*, Vol. 20, p. 158,) ; a hermitage or a monastery (Law. B.C, *Early Indian Monasteries,* Translation No. 29, Bangalore, 1958, p. 1) ; a cell for a Bhikkhu (*SBE*, Vol. 17, pt. II, p. 80, VI. 23.1) ; one of the five kinds of *leṇa* which means a monastery proper, not a shifting and seasonal settlement of monks, (Dutt S, *Buddhist Monks and Monasteries of India*, p. 93). The Sanskrit verb *li* produces *layana* which means a place of rest, house, cell. This is etymologically indicative of the nature of *leṇa* (Williams M. M., *A Sanskrit–English Dictionary (SED)* Reprint, Delhi, 1990, p. 903, Col. II, Dutt S, *op. cit.,* P. 93.). The term *vihāra* therefore stands for a monastic institution where Buddhist monks used to live a settled, organised as well as disciplined life. (Barua D.K., *Viharas in Ancient India,* Calcutta, 1969, pp. 3-4.)
4. *SBE,* pt. II, p. 59, VI. 14.6.
5. *Ibid*, p. 66, VI. 15.10.
6. *Ibid,* pp. 240-41, VIII. 26. 1-3.
7. *Ibid*, pp. 44-45, VI. 3.1, 4 ; p. 46, VI. 6.1 ; p. 47, VI. 7.1, f. ns 2, 4.
8. *SBE,* pt. II, p. 50, VI. 11.2, f. ns 3, 4, 5 and 6.
9. *Ibid,* p. 60, VI. 14. 7, f. ns 3, 4, 5 and 6.
10. The monk Pilindavaccha is variously known such as Pilinda-vaccha, Pilindi-vaccha or Pilindiya-vaccha. He was a *brāhmin* of Sāvatthi (Śrāvasti, modern Sahet-Mahet, Gond and Baharaich districts' border area 27°30′ N, 80°02′ E, UP). Pilinda was his personal name, vaccha was that of his family. He was born before the Buddha's Enlightenment. Pilinda-vaccha became a recluse and learnt the *Kūla-Gandhāra-Vijjā* (Sk. *Kūla-Gandhāra-Vidyā*) which was a magical charm of the Gandhāra country (mod. Rawalpindi and Peshwar region). But when the Buddha appeared, the charm refused to work. Because the *Mahā-Gandhāra* prevented the working of the *Kūla-Gandhāra* and the Buddha knew the former. Thinking this Pilinda-vaccha entered into the order at the Buddha's suggestion with a view to acquiring it. The Blessed One (Buddha) gave him exercises in meditation and he became an Arahant-Malalasekera G.P., *Dictionary of Pāli Proper Names (DPPN),* Vol. II, New Dehli, 1983, pp. 209-11. Contemporary as he was to the Buddha, Pilinda-Vaccha may be considered to have belonged to the 6th-5th centuries B.C.

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(11) *Natthu-Kamma* stands for *Nastakarmma* in which medicine was pushed through the nose using a nose-spoon (*Natthu-Karaṇī*). The *Natthu-Karaṇī* was an instrument to hold up the nose so that the medicinal oil did not run out–Davis R.T.W. and Stede W., *Pāli-English Dictionary (PED)*, Delhi, 1993, p. 346, col. 1.

12. Müller M.F *(ed)*, *SBE*, Vol. 17, pt. II, pp. 53-55, VI. 13.1-2 ; p. 53, f.ns 2,4 ; p. 54, f.ns. 1,2.

13. *Steam-bath* : A six-feet deep pit was filled with charcoal and covered with a coating of earth or sand. The leaves good for rheumatism were spread over the sand. The patient reposed on the leaves on the affected limb which had been rubbed over with oil and turned over and over untill his body had been well steamed—Müller M.F *(ed)*, *SBE*, Vol. 17, pt. II, pp. 56-57, f.n. 4.

14. Müller M.F *(ed)*, *Ibid*, p. 57, VI. 14.3, also see f.n. 2.

15. Belaṭṭhasisa was a *brāhmin* of Sāvatthi who had left the world under Uruvela-Kassapa before the Buddha got Enlightenment. And Belaṭṭhasisa was converted when Uruvela-Kassapa became a follower of the Buddha. Belaṭṭhasisa became an Arahant preceptor of Ānanda, a disciple of the Buddha—Malalasekera G. P. *DPPN,* Vol. II, pp. 312-13.

    It is not known when Ānanda entered the Order. He was a first cousin of the Buddha. He was one of the principal disciples of the Buddha and deeply attached to him. Ānanda's father was Amilodana the Śākyan brother of Suddhodana. Ānanda was most efficient in the preformance of his duties. It was through Ānanda that the Buddha summoned the monks or sent a message to any one. Colleagues on their difficulties often consulted with Ānanda—Malalasekera G.P, *DPPN,* Vol. I, pp. 249-68.

16. Müller M.F *(ed)*, *SBE*, Vol. 17, pt. II, pp. 48-49, VI. 9.1-2, f.n. 2.

17. *Ibid,* p. 79, VI. 22.2.

18. Suppiyā (Sk. Supriyā) was an *upāsikā* of Benares. Her husband was Suppiya (Sk. Supriya). They were both greatly devoted to the Buddhist *Saṁgha* and offered medical services heartily to the sick monks—Malalasekera G.P, *DPPN,* Vol. II, pp. 1124-25.

19. Müller M.F *(ed)*, *SBE,* Vol. 17, pt. II, pp. 80-81, VI. 23.1-2.

20. *Ibid*, pp. 56-57, VI, 14.3-4 ; p. 49, VI 10.2 ; p. 79, VI. 22.2-3.

21. *Jīvaka Komāra-vaccha* : He was the son of the courtesan Sālavatī (she is stated below). He was thrown away on a dust heap around which cows gathered. A royal prince named Abhaya took him up and nourished. Alive as he was, the boy was given the name Jīvaka (*<Jivati*) and as he was brought up by the royal prince (*Kumarena posāpito, posāpite < posāpeti < posāpayati < SK Poṣayati < Vpuṣ*–to bring up, nourish etc.–Davis RTW and Stede W, *PED*, p. 475 col. 2.) the people gave him the name of Komāravaccha. This surname has however been suggested to have really meant the master of the *Kaumārabhṛtya* science

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comprising the treatment of infants. Be that as it may, at Takkasila (Takṣaśilā mod. Taxila 33°40′ N, 72°50′ E) Jīvaka learnt for seven years much about the art of the application of medicine, so much so that he had not seen any plant around Taxila which was not medicinal. His successful leaning made him the famous physician of the time (6th-5th cent. B.C.)—Müller M.F *(ed)*, *SBE*, Vol. 17, pt. II, pp. 173-75, VIII. 1.4-7, p. 174, f.n. 1 ; Williams M. M., *SED*, p. 316, col 3.

Sālavatī : She was a courtesan of Rājagaha (Rājagṛha > Rajgir). She was the mother of Jīvaka. Now, Sālavatī also stood for the name of a village of Kośala (Benares–Ayodhya region bounded on the south by the Ganges, on the east by the Gandak river and on the north by the hills of Nepal) given by Pasendi (Prasenjit) to the *brāhmin Lohicca*. It was so called because *śāla* trees grew within its boundary–Malalasekera G.P, *DPPN,* Vol. II, p. 1121.

22. Müller M.F *(ed)*, *SBE*, Vol. 17, pt. II, p. 179, VIII. I. 13.

23. *Pasata* < SK *Prasṛta* or *prasṛti* which means a handful measure equal to 2 *palas* ; pala is a particular weight and equal to the thirty-second part of a *prastha*–Williams M.M, *SED*, pp. 698-99, col. 3, p. 603, col. 3 ; Davis RTW and Stede W, *PED,* p. 446, col. 1 ; Müller M.F *(ed)*, *SBE*, Vol. 17, pt. II, p. 178, f.n. 1.

24. *Ibid,* pp. 179-84, VIII. I. 14-19. Procedure of the operation *on the Seṭṭhi's head* :

Jīvaka ordered the *Seṭṭhi* to lie down on his bed, tied him fast to the bed, cut through the skin of the head, drew apart the flesh on each side of the incision, pulled two worms out of the wound, then closed up the sides of the wound, stitched up the skin on the head and anointed it with salve. And after twenty one days the patient came back to health—Müller M.F *(ed)*, *Ibid,* pp. 182-83.

25. Müller M.F *(ed)*, *Ibid,* pp. 185-86, VIII. I. 21-22, *Operation Procedure* (p. 186)

Jīvaka carefully observed the patient and the change in his appearance, tied him fast to a pillar, cut through the skin of the belly, drew the twisted intestines out and said to the patient's wife that because of the twisted intestines her husband neither could digest rice–milk, nor food, grew lean, looked discoloured and the veins stood out on his skin ; speaking thus he disentangled the twisted intestines, put them back into their right position, stitched the skin together and anointed it with salve. The *Seṭṭhi's* son regained his health.

26. Müller M.F *(ed)*, *Ibid,* p. 187 ff, VIII. I. 24.

27. *Ibid,* p. 181, VIII. I. 15 ; cf *SBE*, Vol. 13. pt. I, p. 191, f.n. 1.

28. Müller M.F *(ed)*, *SBE,* Vol. 13, pt. I, p. 192, VIII. 39.3 ; pp. 191-92, VIII. 39.1-2.

Pabbajjā (SK. *Pravrajyā*) ordination means ordination or admission into the Buddha's order. *Pabbajjā* is a state of being a Buddhist friar taking the yellow robe–Davis RTW and Stede W, *PED,* p. 414, col. 1.

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29. Kashyapa J. *(ed)*, *Majjhima-Nikāya* (cited below as *MN*, dated to the period earlier than the 3rd cent. B.C.), Vol. I, Bihar, 1958, p. 15, *Sabbāsava Sutta*, 2.10.

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31. Mukherjee B. N., *The Genesis of Buddhism : its social content* (cited as *Genesis of Buddhism*), Calcutta, 1976, pp. 11-12, 58.

32. Kashyapa J. (ed), *Saṁyutta-Nikāya* (cited as *SN*), Vol. 4, Bihar, 1959, pp. 272-74, *Vesālisuttaṁ* ; *cf* Malalasekera G.P, *DPPN*, Vol. I, pp. 659-61 ; *cf* Müller M.F *(ed)*, *SBE*, Vol, 17, pt. II, p. 108, VI. 30.5.

33. Sircar D. C., 'More Inscriptions from Nagarjunakonda', *Epigraphia Indica (EI)*, Vol XXXV, No. 1, pp. 17-18.

34. *Ibid*, pp. 17-18.

35. Altekar A. S. and Misra V., *Report on Kumrahar Excavations 1951-55 (RKE)*, Vol. III, Patna, 1959, p. 103, seal no. 17, KR IV D, plt. XXXII, No. 5.

36. *Ibid*, pp. 106-07, potsherd No. 1, KR IV F, plt. XXXV, No. 4 ; potsherd No. 3, No. 50, KRJ, plt XXXIV B, No. 2.

37. *Dhanvantari* : Dhanvantari is known as a divine surgeon [Acharya J. T. and Acharya N. R. (ed.) *Suśruta Saṁhitā* (3rd-4th cent. A.D.), Chapt. 1, Bombay, 1945, p. 1. *ślks* 2, 3-4 and 5]. In the *Mahābhārata* (*c.* 4th cent. B.C.-4th cent. A.D.) he is mentioned as a deity (Sukthankar V. S., *Mahābhārata, Adiparvan*, Vol. 1, Poona, 1933, p. 124, *ślk.* 37. *cf.* Sastri R. P, *Harivaṁśaparvan*, Poona, 1936, chapt. 29, p. 74 ff.). The *Manu-Saṁhitā* also (*c.* 2nd cent. B.C.-2nd. cent. A.D.) refers to Dhanvantari as a deity worthy of receiving *homa*, an offering to fire. [Tarkaratna P (ed.) *Manu-Saṁhitā* (Bengali), Revised edn, Calcutta, 1397, p. 65, *Ślk* 85 ; *cf.* Shastri J. L. (ed), *Ancient Indian Tradition and Mythology, Brahmāṇḍa Purāṇa*, vol. 24, pt III, Delhi 1983, p. 850, ff and p. 850 f.n.]

38. Altekar A. S. and Misra V., *Op. cit.*, pp. 52-54.

39. Beal S., *The Life of Hiuen-Tsiang*, Delhi, 1986, p. 112.

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A NOTE ON RESTORATION OF TWO OIL PAINTINGS

R. K. MUKHOPADHYAY

INTRODUCTION

"Paintings represent one of the most valuable treasures handed down to us from our past. When did man paint his first painting we do not know and what was the shape of that first painting is also not known to us. But we do know that man started using the medium of colour for expressing his inner self from a very early date. The earliest known example of painting-date in India is from about 200 century B.C. Since that time paintings are being done for fun, pleasure, self-expression decoration or sorcery. But today only a tiny portion of what must have been created by the artist during this long period of art activity remains. The rest has been lost. Man although proud of his artistic past, has not shown enough concern for its safety. He is even today so much taken up by the aesthetic qualities that he seems to have completely forgotten that a painting has a body made of materials that are liable to change. He does not seem to be conscious of the fact that the life of a painting depends upon the reaction of materials with the destructive agencies that are constantly at work. Time spares nobody ; the decay of paintings continues even though we may not be noticing it."*

The only way of preserving paintings like other art objects is to develop an active consciousness amongst the people about the deterioration processes, degenerating agencies present in the atmosphere, and speed of deterioration happened with the paintings.

Most of the paintings are very seldom found in their original state. Almost all the paintings are susceptible to deterioration and break down gradually depending upon the stability, nature and composition of the materials used in the creation of paintings particularly in tropical climatic condition where stress and strain are always found to occur in different layers of paintings, change in appearance of the painting eg. cleavage, cracks, breaking, bulging, cupping, blistering are often noticed. Therefore, preliminary preventive measures are often considered necessary either to arrest or to minimise the deterioration of painting to some extent by adopting suitable preventive measures. In extreme cases preservation as well as restoration of oil paintings are quite inevitable.

* O. P. Agrawal, *Conservation of manuscripts and paintings of south-east Asia*, Butterworth, 1984.

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Every museum with collection of paintings faces problem in cleaning, preserving and restoring of different types of paintings having variable composition, scientific approach for proper diagnosis of affected painting alongwith visual expertised-observation always is needed before offering any treatment to this delicate type of art objects. Considerable time, much patience and extraordinary skill of the conservator is also very necessary to give a longer life to the paintings.

An attempt has been made to discuss problems of two badly affected oil paintings *viz.* Madonna (in the Indian Museum collection) and portrait of Raja Peary Chand Mitra (in the National Library, Calcutta) as well as their preservation methods undertaken by the conservation laboratory of the Indian Museum.

MADONNA (OIL PAINTING) INDIAN MUSEUM

Indian Museum has a pretty good collection of oil paintings. A good number of oil paintings are also added every year through art purchase to enrich its collection. One oil painting (Madonna, previously restored) rectangular with golden decoration wooden frame was received in the laboratory in badly damaged condition which was not only broken in three parts but also affected with dust and dirt and badly retouched and lined by the previous restorer.

CONDITION OF THE PAINTING

The painting was examined visually and with the help of head band magnifier carefully. On examination of the painting it appears that (rectangular 36 cm × 47.5 cm without frame and 60 cm × 71.5 cm with frame) the painting was broken into three parts due to mishandling and improper restoration work done previously thereto. For the purpose of strengthening of painting strip lining with wax resin mixture was done with the painting. Adhersity of the wax resin mixture and in course of time flexibility of the canvas of the whole painting was lost. Varnish layer which appeared on the painting was also darkened with several microcraks.

Necessary steps were taken to remove the painting from the frame and facing was given with the help of nepalese tissue paper. Cracks and broken parts were joined carefully before offering any preservation/restoration treatment and finally restored with lining with new canvas of suitable dimension.

PRESERVATION

In the first instance painting was kept on malinex paper on an working wooden table and facing was done with the help of nepalese tissue paper and maida paste and the painting was reversed. After repairing and rejoining the broken parts facing was removed and sooty materials were removed by non-ionic detergent and water. Removal of old strip lining and

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decomposed varnish followed by a new lining consolidation of pigment was done with puttymaterial. The painting done by the previous restorer was also removed carefully with mixture of organic solvents and mechanically. For removal of old varnish acetone and 1,2 Butanol gave good result and the painting was preserved with a thin coat of mastic varnish. Since the painting was in poor condition mulmul cloth (duly washed and cleaned with distilled water) with maida paste was used for another facing also. Scalpel and spatula have been applied for removing in the painting. Before offering new lining with a new canvas cloth of analogous dimension the back portion of the painting was thoroughly cleaned by rubbing with sand-paper (zero number), wax-resin (Dammer : 3.1 mixture) was used for lining purpose at a temp. 70°C with the iron and pressure was applied for about 12 hours. After that facing was removed carefully with warm water and by mechanical means.

Old dark decomposed varnish was removed slowly by using 1,2 Butanol and acetone gradually. 2, Ethoxy ethanol (cellosolve) with alcohol was applied to remove the pigments of retouched part of the painting. Holes and cracks were finally filled up with wax resin mixture solid by using heated spatula and retouched carefully with water-colour pigments in order to ensure clear distinction between the original and restored part of the painting. One thin coat of varnish was applied on the painting as a precautionary measure considering the hostile climatic condition in and around the museum. Finally the painting on stretcher was fitted with the restored golden frame of the painting.

PORTRAIT (PEARY CHAND MITRA), OIL PAINTING

One large oil painting (100 cm × 125.7 cm) in a golden frame of Raja Peary Chand Mitra was received by the conservation laboratory, Indian Museum for treatment which was badly affected by different deteriorating agencies, poor house keeping and improper restoration treatment given by previous restorer to the painting as well.

CONDITION OF THE PAINTING

The painting along with the frame, stretcher were brought to the Indian Museum with proper care for treatment and was thoroughly and carefully examined before offering any treatment to the painting. It appears that painting was restored by giving lining with a canvas several years back which was seperated from the original painting. Moreover, loses of pigment, cleavage breaking and bulging was also noticed throughout the painting. The painting was rolled in such a way if proper preservation treatment was done at that time much damage, even complete loss of painting would have not occurred with the painting.

Removal of old varnish followed by a new lining and consolidation of the pigment, cleaning of the sooty and dirty materials were done for the purpose of restoration of the painting. Damaged golden frame was also restored. Finally painting was fitted with the golden frame.

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PRESERVATION

First of all the painting was placed on a sufficiently large working table. Malinex paper was applied on both the sides (front and back) of the painting. Old canvas used by the previous restorer was removed carefully. Grime and overpaint were also removed by non ionic detergent and water and by mechanical means.

Before offering a new lining (for strengthening purpose) facing was given with nepalese tissue paper and flour paste. A cloth similar in texture to the original cloth of the painting was used for lining with wax-resin mixture (3.1). The lining cloth was washed to remove its sizing and spread on a table in wet condition. Its creases and wrinkles were removed by brushing from the centre towards the edges.

The new lining cloth was stretched over a newly prepared frame which was likely bigger than the original size of the painting of Raja Peary Chand Mitra. Wax-resin mixture applied at the back of the painting and stretched cloth and was pressed over it in the proper position. Pressing with hands and brushing sticks the old cloth and the new lining together. The painting was dried under pressure, cleaning of the back of the painting with sand paper (zero number) was necessary in order that the lining cloth may stick well to the original support. Facing was removed with warm water after the lining process completed.

Old decomposed varnish was finally removed from the painting by using 1,2 Propanol/ 1,2 Butanol and acetone, cellosolve and alcohol was also used to remove the overpaint and in paint. Consolidation was also done by wax-resin putty and retouched finally with colour pigments.

CONCLUSION

The oil painting too is considered as a part of our cultural heritage like other art objects. So it is now time to give more emphasis on the preservation and restoration of oil paintings as well as considering its delicate nature. Most of the museums are incapable to provide proper micro-climate for keeping the paintings in good condition. Adverse climatic condition improper housekeeping and inadequate storage facilities very often pose problem for the survival of oil paintings. Therefore, restorers are requested to be engaged for looking after the paintings in order to note the changes occurring with the paintings, who will be able to ascertain the problem of paintings, if any.

The storage area for paintings and paintings on display rooms are also required to be sterilised at regular intervals also in order to avoid attack from insects/fungus. The painting should be stored vertically too.

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Different techniques, methods and chemicals are now used for the preservation of oil painting and in this way a good number of oil paintings had already been restored. But the application of the least amount of chemicals should be considered necessary. Excess chemicals may not be good for different layers of painting. So choice of chemicals/techniques always depend upon the need of individual case.

It is to be kept in mind that retouching after restoration should be done carefully also in order to differentiate original areas with that of restored areas retaining aesthetic work. In recent times water colour is used at the time of retouching of missing parts.

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A LIST OF PAINTINGS IN THE INDIAN MUSEUM COLLECTION

PART II

SUJIT NARAYAN SEN

PRE-MUGHAL OR SULTANATE PAINTING

We have seen that the earliest extant remains of Western Indian and Eastern Indian MS schools date five to six centuries prior to when Babar Shah laid the cornerstone of the Mughal imperial fabric in India. In between there evolved another school of painting which has earned the name of Sultanate school of painting. Shams Siraj 'Afif, Emperor Firoz Shah Tughluq's biographer records in the *Tarikh-i-Firoz Shahi* in the fourteenth century : 'it is customary with the kings that their bedrooms are painted so that while alone with their womenfolk they could see them. Sultan Firuz for fear of God issued the following order : "These ateliers (*karkhanas*) should not turn out pictures (*taswir dar in karkhana na kunand*) as this is against the Islamic law. In the place of figure painting (*suratgari*) floral decoration (*naqsh*) should be used".'

The above quote presents an historical evidence in black and white that the sultans who reigned in India before the great Mughals maintained ateliers where painters in their payroll turned out oeuvres in command performance-fashion. The bigoted Emperor Firoz made the offbeat declaration that no figural, only floral delineations ought to be made hence. The fiat must have cast a gloom among the painters then. However, it must be this particular potentate's idiosyncrasy and not everyone's. A parallel is offered by the last great Mughal Aurangzeb's attitudinal aversion towards music and painting as being un-Islamic.

Unfortunately not many pre-Mughal Sultanate paintings have come down to us. But the few that have prove the fact that these paintings were highly Persianised—but with an important difference. They were not exact imitations of any prevalent Persian schools. Their milieu was Indian. True, the figures sported the long Persian coats, but then there appeared the trellised *Kulahdar* turbans (*kulah* = skullcap) in the late fifteenth century MSS

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like the *Shah Nama* in Bharat Kala Bhavan's possession. Nizami's *Sikandar Nama* (NC Mehta Collection) of the same period shows a different turban type which is heart-shaped minus the *kulah*. But here we come across blatant Western Indian MS style native figures with protruding further eye side by side Persianised figures where conspicuous joined eyes under recurved eyebrows are seen. A case in point is the *Ni'mat Nama* MS or the book of cookery in the collection of India Office Library, London. It belonged to the reign of Ghayas Shah Khalji, sultan of Malwa (1469—1500 AD). Though the MS shows unmistakable Shirazi affinity of the late fifteenth century, the occasional Indian flashes in the compositions are interesting, *e.g.*, the appearance of Indian female types that we come across in the Mandu *Kalpasutra* of 1439. Conventional Western Indian MS style clouds, lotus pools with aquatic birds in the foreground, the treatment of furniture, decorative trimmings in the rooms and askew bed pillows are all pointers to borrowings from Western Indian MSS.

We can trace the beginning of Persian style in Indian paintings with the invasion of Persian figures in the borderlands of Jain MS paintings in the fifteenth century, to wit, the camel riding Persian hero Behram Gur with his wife Azada in the margin of a folio from the *Kalpasutra* and *Kalakacharyakatha*, Devasano Pado Bhandar, Ahmedabad of *circa* 1475 AD. In the late fourteenth century Jain MSS can be seen the depictions of Shahi kings with Mongoloid features and Persian dress. But these Mongoloid looks made way for Timurid features in the presentation of the same characters in the *Kalakacharyakatha* MSS of the late fifteenth century.

The romance of *Laur-Chanda* composed in Avadhi verse by Mulla Daud in 1378—80 AD and another called *Chaurapanchashika* lyrically composed by the eleventh century Kashmiri poet Bilhana became highly popular in India. The dates and provenances of these two MSS, the former divided between the Lahore Museum and the Chandigarh Museum, and the latter in the NC Mehta Collection have roused controversies whether they could be called pre-Mughal or post-Mughal. But one thing is sure. Here we find a successful culmination of a syncretistic style that has been struggling hard to reach an aesthetically standard Indianness throughout the fifteenth and early sixteenth centuries. And it is no accident when we find the Mughal painters of the *Tuti Nama* (preserved in the Cleveland Museum), which is one of the earliest Akbari MSS (*c.* 1560), feverishly trying to improve upon the norms set in the *Laur-Chanda* MS (*c.* 1525) of the Prince of Wales Museum, Bombay. Perhaps the same could be argued about the origin of the Rajasthani miniature styles, as well.

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PROVINCIAL PAINTING

Eighteenth century (carried over to the nineteenth century) in India presents an important cultural and political watershed. Mahrattas gained supremacy over the Mughals and different provincial centres became virtually independent of the central authority. At the same time, taking advantage of the chaotic scenario, the Hon'ble John Company was steadily making its military power felt unmasking its innocuous commercial Indiaman facade. In the field of art—especially painting, these turning points became only too palpable. New schools of painting grew up in Lucknow, Murshidabad, Hyderabad and Farrukhabad. In the broader spectrum there also developed a Mahratta school, Benaras school, Sikh school and Tanjore school. Collectively these different schools are known to art historians as the Provincial school of Indian painting. The Indian Museum collection includes specimens of most of these schools.

These schools, though unmistakably bear the Mughal or Deccani legacies (in the case of Sikh school the influence of Pahari school is predominant) also at times betray the Western influence for which the reason is not far to seek. Under the patronage of the virtually independent Lucknow Nawabs there flourished the famous Lucknow school. Some of the high profile Oudh painters were Mirchand, Bahadur Singh, Hunhar and Mammujan. The Lucknow school represents a wide variety of subjects in which individual portraitures occupy a distinguished place. On the countrary, the Farrukhabad school presents a rather limited repertoire, *viz.*, harem and terracs scenes. A generous sprinkling of rural and religious subjects can also be seen here. Hyderabad presents an interesting array of individual portraitures comprising royals, divines and grandees among others, though in finesse they are not so well-executed as the original Mughal or Deccani ones. Both in Hyderabad and Murshidabad palace courtyard scenes or leisurely spectacles of nautch and music with beholders smoking hookahs are commonly depicted. In these two schools it appears that princesses outnumber princes. Weird representations of grotesques and fairies are seen in the Murshidabad school, but these are few and far between in the Lucknow school. Scenes of chase are common with all the schools.

A charming feature of the provincial schools is the representation of different musical modes embodying the proverb that leisure breeds culture and civilization.

PAHARI PAINTING

Like the Rajasthani school the Pahari school of Punjab Hills is also sub-divided into diverse idioms belonging to different states like Kangra, Basholi, Guler, Garhwal, Chamba, Nurpur, Mandi, Jammu etc. During the late 17th century a number of Mughal artists left the Emperor Aurangzeb's atelier in search of patronage elsewhere being discouraged by

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the latter's discountenance of music and painting. A few arrived at the court of Raja Kripal Pal of Basholi (late 17th century) and started training up local artists who were called *Tarkhans*. In the later half of the 18th century a specific style emerged in the hills (first evidenced in Kangra and Guler) based on ethnic human features and flora. It can easily be distinguished that shows the nose and forehead in a straight line and lush green local landscapes and sometimes identifiable streams and hills. Kings Samsar Chand of kangra, Govardhan Chand and his son Prakash Chand of Guler, and Balwant Singh, a nobleman of Jammu were eminent patrons of the Pahari school of painting. A migrant artist family from Kashmir headed by Pandit Seu established the fame of this school. His sons Nainsukh and Manak, and grandsons Kushala, Kama, Godhu, Nikka and Ranjha turned out to be excellent Pahari school artists.

KALIGHAT PAINTING

Kalighat school of *paṭa* painting came into vogue in Calcutta in the area surrounding the famous Kali temple of Calcutta. It flourished in the nineteeth and early part of the twentieth century. The style was introduced by a group of *patuas*. They painted on both hand-made and mcahine-made papers in water colour. Though they mainly followed the traditional folk style they brought in certain stunning eclecticism apart from the media. Unlike the traditional Bengali *patuas* they introduced thickened sweeping brush strokes to define figural contours which are reminiscent of the classical mural technique of ancient India. The themes presented not only mythological scenario, but also protrayals of the follies and foibles of the contemporary baboo society in the spirit of burlesque. A few names of the Kalighat *patuas* have come down to us like Nibaran Chandra Ghosh (*c.* 1835—1930), Kali Charan Ghosh (*c.* 1884—1930) and Kanai Lal Ghosh (*b.* 1907). The Kalighat *Pata* painters turned out cheap paintings on a mass production basis—very popular in those days which have now become cherished antiques fit for museums.

EAST INDIA COMPANY PAINTING

The John Company's advent as the supreme political power in the subcontinent spelt a general doom of traditional arts here. In the eyes of Westerners Indian paintings suffered from certain serious shortcomings, *e.g.*, lack of perspective, landscape and chiaroscuro. To be precise Europeans were not on the same wavelength as Indians in the matter of creative arts. Besides, in an age when there was no photography, the sahibs wished to introduce realism in pictures with cast shadows and a touch of down-to-earthness. For their subjects they chose people with whom they came into day to day contact, *e.g.*, dhobis, munshis,

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money-changers, sepoys, palanquin bearers, grocers, sweetmeat sellers, servitors, musicians and so on and so forth. Besides studies of exotic Indian flora and fauna immensely interested them. Thus, they trained up Indian artists in their own taste and the Company school of painting came into being. The old traditional paintings, for lack of partonage, took the back seat, became degenerate and descended to the status of Bazar paintings. In the Company days, for the first time ivory paintings came into vogue, and mica paintings became popularized. In technique the old tempera and gouache were relegated to the background. Water colour was introduced along with fine machine-made papers.

BENGAL PAINTING

The superintendent of the Calcutta school of Art EB Havell appointed Abanindranath Tagore Vice Principal of the school in 1905 in his desire to shift the focus of training up pupils from Western manners to the Indian. According to him in this task Abanindranath Tagore eminently filled the bill as he was 'The only really original native artist which India has produced under the British administration.' The period was charged with *swadeshi* or nationalistic enthusiasm. Ananda Kentish Coomaraswamy's path breaking researches and publications on Indian art, Margaret E Noble's (Sister Nivedita) participation as an ardent reviewer of the art movement envisioning the glory of a new awakening and the Japanese scholar idealogue Kakuro Okakura's publication of *The Ideas of the East* underlining the importance of the pan-Asian outlook opened up rich prospects for the emergence of the Neo-Bengal school of painting. Being the art movement's doyen Abanindranath successfully amalgamated our traditional techniques with the Japanese, *e.g.*, the wash method.

The Bengal Art Gallery has on display the miniatures of the 18th century Murshidabad School, Kalighat *paṭas* and Santhal *paṭas*, specimens of the East India Company School, and the Neo-Bengal *oeuvre* of Abanindranath Tagore, Gaganendranath Tagore, Rabindranath Tagore, Samarendranath Tagore, Sunayani Debi, Nandalal Bose, Jamini Roy, Asit Kumar Haldar, Samarendranath Gupta, Venkatappa, Ravi Shankar Raval, Mukul Dey, Kshitindranath Majumdar, Sarada Ukil, Abdur Rahim Chugtai, Jamini Prakash Gangopadhyaya and Satish chandra. Among the more recent the works of Debiprasad Roychowdhury, Gopal Ghosh, Hrishikesh Debbarman and Krishnalal Das have also found honoured places in the gallery.

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LIST OF PAINTINGS IN THE COLLECTION OF THE ART SECTION, INDIAN MUSEUM, CALCUTTA

Sl. No.	Acc No.	Description and size	School
1.	R.32B/37	A sultan enjoys a nautch performance 36 cm. × 27.3 cm. 16th century	Sultanate
2.	R.14959/935	A mahout and a rider with a wine jar & cup on a grotesque elephant 51 cm. × 36 cm. Early 17th century	Sultanate
3.	R.132 C/21	A queen holds court with female courtiers 34.2 cm. × 25.7 cm. Early 17th century	Sultanate
4.	R.32 A/23	A sultan on a throne with men & women around him 16th century	Sultanate
5.	R.202/26	A sultan on horseback 34 cm. × 24 cm. 17th century	Sultanate
6.	R.612/3	A man with a hawk 30.5 cm. × 23 cm. 16th century	Sultanate
7.	R.G-18/24	A king holds court with a prisoner bofore him 25.2 cm. × 17 cm. Late 16th century	Sultanate
8.	R.593/40	A cavalry marching up 35.6 cm. × 26.5 cm. 16th century	Sultanate
9.	R.148/30	A severed head being presented to a sultan 36.6 cm. × 27 cm. 16th century	Sultanate

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Sl. No.	Acc No.	Description and size	School
10.	R.554/45	A drinking dervish 27.1 cm. × 21 cm. 17th century	Sultanate
11.	R.589/25	A divine talking to disciples 34.5 cm. × 25.3 cm. 16th century	Sultanate
12.	R.549/27	Obverse : a saint. Reverse : a sultan on a throne. An Indian looks on and a woman peeps from a window 35.9 cm. × 27.7 cm. 16 century	Sultanate
13.	R.At/87/778	Two ladies in a palace 20.7 cm. × 17.5 cm. 16-17th century	Sultanate
14.	R.At/87/777	A nayaka and a nayika inside a palace. A woman with a monkey outside it 17.4 cm. × 28 cm. 16-17th century	Sultanate
15.	R.At/90/1174	A soldier killing a monster. Inscriptions on both sides (damaged) 20.7 cm. × 17.5 cm. 16-17th century	Sultanate
16.	R.At/90/1177	A man killing a demon and a king receiving a messenger. Inscriptions and illustrations on both sides (damaged) 30.5 cm. × 21 cm. 16-17th century	Sultanate
17.	R.At/90/1179	A horseman darting an arrow at another Inscriptions on both sides (damaged) 30.5 cm. × 20.4 cm. 16-17th century	Sultanate
18.	R.At/90/1175	The scene of a murder (damaged) 30.5 cm. × 21 cm. 16-17th century	Sultanate

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Sl. No.	Acc No.	Description and size	School
19.	R.At/90/1180	A man carrying two people in his arms (damaged) 26.5 cm. × 18.3 cm. 16-17th century	Sultanate
20.	R.At/90/1173	A suppliant before three horsemen (damaged) 30 cm. × 20.6 cm. 16-17th century	Sultanate
21.	R.At/90/1172	A king holding a wine-cup with courtiers and attendants listening to music (damaged) 29 cm. × 20 cm. 16-17th century	Sultanate
22.	R.At/90/1178	Two horsemen face to face with spears (damaged) 30 cm. × 20.5 cm. 16-17th century	Sultanate
23.	R.At/90/1176	A horseman transfixing another with spear (damaged) 30.5 cm. × 21.2 cm. 16-17th century	Sultanate

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Sl. No.	Acc No.	Description and size	School
1.	R.At/86/697	A god with devotees 12 cm. × 11 cm. 18th century	Provincial
2.	R.At/86/698	Krishna with Gopies. (damaged) 10.8 cm. × 12.3 cm. 18th century	Provincial
3.	R.At/66/1	Lady on a grotesque animal 25 cm. × 19 cm. Early 19th century	Provincial
4.	R.At/86/699	Krishna with Gopies 16 cm. × 12.2 cm. 18th century	Provincial
5.	R.At/86/696	Krishna and Balarama engaged with playmates 11.2 cm. × 8.7 cm. 18th century	Provincial
6.	R.At/86/695	Rasalila 10.7 cm. × 12 cm. 18th century	Provincial
7.	R.At/86/702	Garuda with two women 15 cm. × 11 cm. 18th century	Provincial
8.	R.At/86/700	Krishna, Balarama and messengers 11.5 cm. × 10.8 cm. 18th century	Provincial
9.	R.At/86/701	Krishna and Balarama with sages and royals 11.5 cm. × 10.8 cm. 18th century	Provincial
10.	R.At/80/263(A)	Rasalila 23 cm. × 15 cm. 18th century	Provincial
11.	R.At/81/284	An orgy 21.5 cm. × 27.2 cm. 18th century	Provincial
12.	R.At/66/7	A lady holding mangoes 16.5 cm. × 10.4 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
13.	R.C-3/S.429	Men on rafts. Persian inscription at the back 32.5 cm. × 22.3 cm. 18th century	Provincial
14.	R.C-1/S.431	Demons with a captive prince. Persian inscription and royal seal at the back 30 cm. × 22.2 cm. 18th century	Provincial
15.	R.G-48/S.427	A prince's court. Persian inscription at the back 31.8 cm. × 22.5 cm. 18th century	Provincial
16.	R.G-44/S.423	An ogress and a prince. Persian inscription at the back. 31.2 cm. × 22.3 cm. 18th century	Provincial
17.	R.52/S.419	A prince and a princess with waiting-maids 31 cm. × 22 cm. 18th century	Provincial
18.	R.G-49/S.414	A nobleman with a hermit. Persian inscription at the back 32 cm. × 22.2 cm. 18th century	Provincial
19.	R.47/S.409	Two kings holding court. Persian inscription at the back 31.7 cm. × 22.5 cm. 18th century	Provincial
20.	R.43/S.401	A king and a prince with musicians. Persian inscription and royal seal at the back 31.2 cm. × 22.5 cm. 18th century	Provincial
21.	R.C-2/S.425	Devotees in a dargah. Persian inscription at the back 31.2 cm. × 21.2 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
22.	R.45/S.404	A princess in a hermitage with a bird. Persian inscription at the back 31.4 cm. × 22.5 cm. 18th century	Provincial
23.	R.46/S.406	A king with a portrait painter at his Court. Persian inseription at the back 31.6 cm. × 22 cm. 18th century	Provincial
24.	R.G-53/S.421	A king holding court at night 30 cm. × 22.3 cm. 18th century	Provincial
25.	R.F-1/S.438	Blue god with a winged horse. Persian inscription at the back 29.2 cm. × 19.5 cm. 18th century	Provincial
26.	R.G-57/S.417	A youth brought captive before a princess 30.7 cm. × 22.5 cm. 18th century	Provincial
27.	R.50/S.411	A prince with fairies 31.6 cm. × 22.5 cm. 18th century	Provincial
28.	R.519/S.661	A prince in yellow dress 13.9 cm. × 9 cm. 18th century	Provincial
29.	R.13226/S.674	A lady in black 19 cm. × 16 cm. 18th century	Provincial
30.	R.13227/S.678	A lady with a spear 18.5 cm. × 16 cm. 18th century	Provincial
31.	R.13228/S.675	A lady with flower stalks 17.4 cm. × 16 cm. 18th century	Provincial
32.	R.F-5/S.554	Festivity at the birth of a child. Persian inscription with royal seal at the back 29.6 cm. × 19.9 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
33.	R.F-4/S.552	Churning of the milk-ocean. Persian inscription at the back 29.5 cm. × 20.5 cm. 18th century	Provincial
34.	R.14043/S.534	A man on a blue horse and a lady by the side of a waterfall 29.8 cm. × 21 cm. 18th century	Provincial
35.	R.205/S.592	Scene of a tribal household 34.5 cm. × 25.5 cm. 18th century	Provincial
36.	R.13132/S.623	A haloed Muslim saint with two children 26.4 cm. × 17.8 cm. 18th century	Provincial
37.	R.80	Huris before dervishes 33.8 cm. × 21.2 cm. 18th century	Provincial
38.	R.560	An old man with an armed youth inside a dargah 26.8 cm. × 18 cm. 19th century	Provincial
39.	R.E-1	A lady with an attendant worshipping Krishna-image 18th century	Provincial
40.	R.14877/S.867	A hermit with ladies 18th century	Provincial
41.	R.605	Obverse : Musicians in Persian style. Reverse : Two ladies playing chess 18th century	Provincial
42.	R.638/S.145	A prince and a begum 30.5 cm. × 20.5 cm. 18th century	Provincial
43.	R.265/S.138	Dance of the dervishes 33 cm. × 24 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
44.	R.482/S.164	Jahangir rewarding a man for killing a lion 45 cm. × 34 cm. 18th century	Provincial
45.	R.633/S.162	Jahangir rewarding a man for killing a lion 38.2 cm. × 26.5 cm. 18th century	Provincial
46.	R.14880/S.870	A man with a caged bird before a prince. Inscription at the back 30.2 cm. × 19.5 cm. 18th century	Provincial
47.	R.353/S.140	Dancing dervishes 26.7 cm. × 24 cm. 18th century	Provincial
48.	R.14944/S.920	A prince and a princess remain embraced in death. A man weeping 34 cm. × 24.5 cm. 18th century	Provincial
49.	R.171/S.157	Elephant-fight 45 cm. × 33 cm. 18th century	Provincial
50.	R.88/S.171	A king 36.5 cm. × 24 cm. 17th century	Provincial
51.	R.G-72	A queen on a throne. Inscription at the back 28.2 cm. × 21.5 cm. 18th century	Provincial
52.	R.S.216	A lady engaged in toilette 35 cm. × 25.3 cm. 18th century	Provincial
53.	R.14901/S.891	Two armed youths seated tete-a-tete 12.5 cm. × 11.2 cm. Late 17th century	Provincial
54.	R.14900/S.890	Ink-sketch of a lady's bust-profile Reverse : A seated man 14.2 cm. × 10.4 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
55.	R.383/S.207	A saint 32.4 cm. × 23.4 cm. Late 17th century	Provincial
56.	R.539/S.221	A rani engaged in toilette at night with attendants 31.6 cm. × 22 cm. 18th century	Provincial
57.	R.420/S.200	A lady with a wine-cup and bottle 29.5 cm. × 23.2 cm. 18th century	Provincial
58.	R.382/S.210	A king 27.2 cm. × 20 cm. 18th century	Provincial
59.	R.13448/S.206	A lady wringing out her hair 24 cm. × 19.4 cm. Early 19th century	Provincial
60.	R.663/S.60	Two hermits. (line-drawing) 27 cm. × 19.5 cm. 17th century	Provincial
61.	R.14381/S.73	A saint with huris 26.5 cm. × 16.2 cm. 18th century	Provincial
62.	R.318/S.64	Two men before a faquir and his chela 29 cm. × 22 cm. 17th century	Provincial
63.	R.204/S.78	Fairies before a man 30.6 cm. × 23 cm. 18th century	Provincial
64.	R.13428/S.90	A prince and a princess with their retinue 38.5 cm. × 27.5 cm. 18th century	Provincial
65.	R.175/S.76	A stricken saint being attended to by fairies 40.3 cm. × 31 cm. 18th century	Provincial
66.	R.213/S.147	A Bhil and his wife hunting deer at night 40.5 cm. × 27.5 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
67.	R.At/90/1354	An elephant-grotesque with Krishna as the rider 28.7 cm. × 22 cm. 19th century	Provincial
68.	R.At/90/1404	A blue god and a horse-faced goddess. On cloth 34.2 cm. × 21 cm. 18th century	Provincial
69.	R.At/90/S.1414	A man subduing two horses. Reverse : two horsemen going on an hunting expedition 42.4 cm. × 35 cm. 18th century	Provincial
70.	R.At/90/S.1415	A man on a chariot facing women with pitchers, a bear, birds and villagers 41.3 cm. × 28.5 cm. 18th century	Provincial
71.	R.At/90/S.1416	Scene from an annecdote 42 cm. × 29 cm. 18th century	Provincial
72.	R.At/90/S.1395	Radha and krishna on a chariot with Gopies 29.5 cm. × 24.2 cm. 18th century	Provincial
73.	R.At/90/S.1400	A MS. folio with Sanskrit inscriptions on both sides 22 cm. × 30.9 cm. 18th century	Provincial
74.	R.At/88/S.859	Indra on Airavata with Urdu inscription at the back 18th century	Provincial
75.	R.14902/S.892	Two women. (Unfinished) 16 cm. × 10.5 cm. Early 19th century	Provincial
76.	R.14909/S.897	Two women with attendants. (Unfinished) 20 cm. × 15 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
77.	R.662/S.773	Portraits of two men. (Unfinished) 26 cm. × 20.1 cm. 18th century	Provincial
78.	R.14895/S.885	A girl holding a jar. (Unfinished) 12.5 cm. × 10.3 cm. 18th century	Provincial
79.	R.642/S.780	A hunter cutting off the neck of a deer 29 cm. × 19.7 cm. 18th century	Provincial
80.	R.14910/S.900	A nobleman listening to veena. (line-drawing) 20 cm. × 17 cm. 18th century	Provincial
81.	R.504A.G/S.771	A woman beating an ascetic on a grazing ground. (line-drawing) 26.7 cm. × 20.5 cm. 18th century	Provincial
82.	R.13231/S.846	A lady holding a parasol with another lady. (line-drawing with names of colours written down) 13.6 cm. × 15 cm. 19th century	Provincial
83.	R.14896/S.886	A fairy. (line-drawing) 14.4 cm. × 12.6 cm. 19th century	Provincial
84.	R.451/S.835	A seated hunchback. Pencil-drawing 18.5 cm. × 15.5 cm. 19th century	Provincial
85.	R.428/S.844	Three seated bearded figures. (Partially primed with inscription) 29.4 cm. × 12 cm. 18th century	Provincial
86.	R.257/S.833	Men fighting. Others drinking or watching. (Partially coloured) 18.6 cm. × 13.5 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
87.	R.561/S.733	Two lions fighting each other 39.2 cm. × 28 cm. 18th century	Provincial
88.	R.396/S.719	Grotesque. Four deer with one head 23.2 cm. × 18 cm. 19th century	Provincial
89.	R.406/S.705	A king smoking hookah 18.5 cm. × 20.1 cm. 19th century	Provincial
90.	R.337/S.252	A king on horseback 37 cm. × 29.8 cm. 19th century	Provincial
91.	R.305/S.249	Ladies feeding pigeons 36.7 cm. × 29.5 cm. 18th century	Provincial
92.	R.215/S.238	A prince and a princess hawking 35.6 cm. × 27 cm. 18th century	Provincial
93.	R.G-92/S.256	A nobleman smoking hookah with an attendant 29.7 cm. × 23.2 cm. 19th century	Provincial
94.	R.86/S.240	A nobleman with his lady in harem 40 cm. × 25.5 cm. 19th century	Provincial
95.	R.D-8/S.255	Portrait of a nawab 31.5 cm. × 22.4 cm. 19th century	Provincial
96.	R.14879/S.869	A nobleman with two children. Oils 30 cm. × 24.3 cm. 19th century	Provincial
97.	R.370/S.241	Ladies playing flute with deer. A youth standing under a tree 34.6 cm. × 24.6 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
98.	R.25/S.265	Portrait of a nawab 21.5 cm. × 16.5 cm. 19th century	Provincial
99.	R.619/S.260	A nobleman. On ivory 9.9 cm. × 9.4 cm. 19th century	Provincial
100.	R.151/S.251	A nobleman with two ladies 33 cm. × 26.2 cm. 19th century	Provincial
101.	R.13446	A lady in a cobweb. On cloth Persian inscriptions on the wooden frame 19th century	Provincial
102.	R.13259/S.282	Profile of a youth with Persian inscription 27.5 cm. × 27 cm. 19th century	Provincial
103.	R.W.N.239	Muhammad on flying Buraq 24.6 cm. × 18.5 cm. 19th century	Provincial
104.	R.13349/S.271	Ladies drinking on a terrace 27 cm. × 22.7 cm. 18th century	Provincial
105.	R.14404/S.279	Portrait of a king with Urdu inscription 29.8 cm. × 22.4 cm. 19th century	Provincial
106.	R.14405/S.281	Portrait of a king. With Persian inscription 19th century	Provincial
107.	R.219/S.273	A young prince being entertained At the bottom a camel with two calves 29.5 cm. × 22 cm. 18th century	Provincial
108.	R.12/S.288	A nobleman on horseback with armed retainers 35.4 cm. × 25.2 cm. 19th century	Provincial

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Sl. No.	Acc No.	Description and size	School
109.	R.90/S.285	Two *baniya* businessmen with two attendants 43 cm. × 33 cm. 19th century	Provincial
110.	R.478/S.363	A nobleman on horseback with four retainers 37.3 cm. × 26.2 cm. 18th century	Provincial
111.	R.581/S.330	A yogini in the company of three female disciples 27.6 cm. × 24.5 cm. 18th century	Provincial
112.	R.69/S.329	A yogini. A shivalingam and two female worshippers 32.2 cm. × 23.7 cm. 18th century	Provincial
113.	R.73/S.342	A hookah smoking nobleman meets a female on a terrace. There are two retainers. (damaged) 33.2 cm. × 21 cm. 18th century	Provincial
114.	R.217/S.332	Two ladies drinking on a terrace with a female attendant. Inscription at the back 34 cm. × 25.2 cm. 18th century	Provincial
115.	R.359/S.328	A man feeding Ganesha 33.5 cm. × 27 cm. 18th century	Provincial
116.	R.144/S.336	A Chaupar game 30 cm. × 20 cm. 18th century	Provincial
117.	R.212/S.341	Ladies in a hermitage. (damaged) 40.2 cm. × 28 cm. 18th century	Provincial
118.	R.303/S.335	Ladies playing chaupar in lamplight 36.5 cm. × 27.5 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
119.	R.549/S.27	A holyman at a king's court 35.7 cm. × 27.5 cm. 18th century	Provincial
120.	R.193/S.339	Noorjahan playing Holi. Inscription at the back 41.2 cm. × 21.6 cm. 18th century	Provincial
121.	R.315/S.344	A nobleman enjoying music 44.2 cm. × 52 cm. *c.* 1800 A.D.	Provincial
122.	R.76/S.364	A nobleman riding a horse 29.6 cm. × 22.7 cm. *c.* early 19th century	Provincial
123.	R.14955/S.931	A nobleman with his retinue at a caravanserai 37.5 cm. × 30 cm. 1816 A.D.	Provincial
124.	R.309/S.353	A nobleman on a terrace smoking hookah and enjoying music 30.3 cm. × 26 cm. 18th century	Provincial
125.	R.521/S.351	A saint in the company of huris 35.5 cm. × 25.2 cm. 18th century	Provincial
126.	R.13353/S.267	A lady seated on a terrace 28 cm. × 21.6 cm. 18th century	Provincial
127.	R.339/S.384	A man playing flute on a riverbank, a girl swimming with a pitcher in the water 35.5 cm. × 25 cm. *c.* 1775 A.D.	Provincial
128.	R.277/S.368	Two men watching a group of ladies engaged in toilette 45.5 cm. × 25 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
129.	R.71/S.367	Profile of a queen holding a wine-cup and flask 18th century	Provincial
130.	R.351/S.392	A prince and his lover on horsebacks by a river 31.6 cm. × 24 cm. *c.* 1790 A. D.	Provincial
131.	R.11/S.390	Two horsemen hunting deer 27 cm. × 19.5 cm. 18th century	Provincial
132.	R.13286/S.396	A king and a queen on horsebacks 27.3 cm. × 21.5 cm. 18th century	Provincial
133.	R.G-95	A lady on a boat and two men angling 14.2 cm. × 11.6 cm. 18th century	Provincial
134.	R.216/387	A prince crossing a stream on horseback 24.5 cm. × 19 cm. *c.* 1775 A.D.	Provincial
135.	R.F-6/377	Scene of a massacre inside a dargah where a lady is making her obeisance 39.3 cm. × 19.8 cm. 18th century	Provincial
136.	R.G.-464	A nobleman holding a pistol (line-drawing) 32 cm. × 25.5 cm. 18th century	Provincial
137.	R.466.	A nobleman. (line-drawing) 25.5 cm. × 19.7 cm. 18th century	Provincial
138.	R.9755/54	Krishna with two Gopies 15 cm. × 13 cm. 19th century	Provincial
139.	R.13215	A falconer. (line-drawing) 16.5 cm. × 8.4 cm. 19th century	Provincial

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Sl. No.	Acc No.	Description and size	School
140.	R.9718/S.46	A four-armed seated Lakshmi 21.3 cm. × 17.2 cm. 19th century	Provincial
141.	R.9712/49	Nrisiṁhaavatara 21.1 cm. × 17 cm. 19th century	Provincial
142.	R.10060/41	Gajalakshmi 21.2 cm. × 15.2 cm. 19th century	Provincial
143.	R.9713/48	Siva and Uma with their respective monuts (damaged) 21.5 cm. × 17.3 cm. 19th century	Provincial
144.	R.9709/52	Krishna with two Gopies 21.5 cm. × 17 cm. 19th century	Provincial
145.	R.9715/S.44	Rama, Lakshmana, Sita and Hanumana 21.3 cm. × 17.2 cm. 19th century	Provincial
146.	R.13179	Muhammad flying on Buraq (line-drawing) 24.4 cm. × 16.1 cm. 19th century	Provincial
147.	R.9714/S.47	A goddess on a tiger 21 cm. × 17.2 cm. 19th century	Provincial
148.	R.9717/S.45	Hanumana 22 cm. × 17 cm. 19th century	Provincial
149.	R.509	Hazrat Ali with Hassan and Hussain. Charba 19.5 cm. × 16 cm. 19th century	Provincial
150.	R.10597	A seated man. Prime coated. (Partially coloured. Torn) 20.3 cm. × 15 cm. 19th century	Provincial

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Sl. No.	Acc No.	Description and size	School
151.	R.9711/S.50	A four-armed goddess on a tiger 22 cm. × 16.7 cm. 19th century	Provincial
152.	R.19001	Indrajeet shooting his dart at flying Hanumana 21.2 cm. × 15.2 cm. 19th century	Provincial
153.	R.9716/S.43	Ganesha and a goddess riding a crane 21.2 cm. × 17 cm. 19th century	Provincial
154.	R.9710/S.43	Kali 21.5 cm. × 17.2 cm. 19th century	Provincial
155.	R.468	An immersion procession of Durga 25 cm. × 19 cm. 19th century	Provincial
156.	R.10056/S.36	Radha and Krishna 13 cm. × 15.2 cm. 19th century	Provincial
157.	R.At/90/1293	Rama and Sita on throne 50.5 cm. × 38 cm. 19th century	Provincial
158.	R.At/90/1394	A row of avataras 61.6 cm. × 21.6 cm. 19th century	Provincial
159.	R.At/90/1398	*Vastraharana* 51.8 cm. × 43.2 cm. 19th century	Provincial
160.	R.At/90/1396	Kaliyadamana 46.2 cm. × 46 cm. 19th century	Provincial
161.	R.At/90/1397	A boat carrying Krishna and Gopies 51 cm. × 43 cm. 19th century	Provincial
162.	R.At/87/782	A blue deity with devotees 29.5 cm. × 18.5 cm. 18th century	Provincial

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Sl. No.	Acc No.	Description and size	School
163.	R.At/87/750	The fable of crane and fox 18 cm. × 12.2 cm. 19th century	Provincial
164.	R.At/87/756	A MS. showing 32 illustrations of punishments meted out in Hell. It contains another 31 pages of writing in Hindi 33.5 cm. × 17.5 cm. 19th century	Provincial
165.	R.At/87/760	A lady with surahi and wine-cup 19th century	Provincial
166.	R.At/87/761	A lady with surahi and wine-cup 19th century	Provincial
167.	R.At/87/776	A scene depicting nativity. 29 cm. × 15 cm. 19th century	Provincial
168.	R.At/87/754	An archer with two ladies. In gilt frame 67 cm. × 47 cm. 19th century	Provincial
169.	R.14435	A faquir in jungle with ladies 39 cm. × 30.4 cm. 19th century Nahar collection	Provincial
170.	R.—	A queen on elephant. Studded with coloured stones 47 cm. × 28.5 cm. 19th century Nahar collection	Provincial
171.	R.14434	An emaciated Majnun inside a jungle with Laila 35.4 cm. × 26.5 cm. 19th century Nahar collection	Provincial
172.	R.14445	Ladies in harem. With royal seal 49.2 cm. × 33.7 cm. 19th century Nahar collection	Provincial

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Sl. No.	Acc No.	Description and size	School
173.	R.14433	A bald headed youth lies dead in a jungle with weeping ladies 39.5 cm. × 32 cm. 19th century Nahar collection	Provincial
174.	R.14500	A prince attending a court with a queen on throne surrounded by female courtiers 42.2 cm. × 33 cm. 18-19th century Nahar collection	Provincial
175.	R.433/430	A seated prince 32 cm. × 24.5 cm. 19th century	Provincial
176.	R.405/426	A seated prince 32 cm. × 24.7 cm. 19th century	Provincial
177.	R.313/422	A Sikh prince 27.7 cm. × 22.5 cm. 19th century	Provincial
178.	R.241/664	A Sikh king 27.6 cm. × 20.5 cm. 19th century	Provincial
179.	R.13121/663	Maharaja Ranjit Singh of Punjab 13.7 cm. × 9.4 cm. 19th century	Provincial
180.	R.13126/656	A Sikh nobleman 14.3 cm. × 9.7 cm. 19th century	Provincial
181.	R.13125/665	A Sikh prince 13 cm. × 10.2 cm. 19th century	Provincial
182.	R.14191/572	Standing profile of a Sikh soldier 13.9 cm. × 10.9 cm. 19th century	Provincial
183.	R.14170/602	Portrait of a Sikh soldier 16.3 cm. × 13.8 cm. 19th century	Provincial

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Sl. No.	Acc No.	Description and size	School
184.	R.14165/587	Profile of a bearded man, probably Sikh 15 cm. × 12 cm. 19th century	Provincial
185.	R.14189/577	Profile of a Sikh 15 cm. × 11.2 cm. 19th century	Provincial
186.	R.14171/612	Profile of a Sikh 15.2 cm. × 12.8 cm. 19th century	Provincial
187.	R.14169/615	Profile of a Sikh 14.7 cm. × 12.7 cm. 19th century	Provincial
188.	R.14188/582	Profile of a Sikh 15.4 cm. × 11.3 cm. 19th century	Provincial
189.	R.14168/588	Profile of a Sikh. (Unfinished colouring) 15.3 cm. × 13 cm. 19th century	Provincial
190.	R.608	Charba drawing of three ladies in profile (on skin ?) 74 cm. × 53 cm. 19th century	Provincial
191.	R.13181/840	Ranjit Singh of Punjab on horseback. (line-drawing) 14 cm. × 18.8 cm. 19th century	Provincial
192.	R.13234/845	Lovers. (Partially coloured. Damaged) 13.8 cm. × 12.5 cm. 19th century	Provincial
193.	R.13235/839	A Sikh horseman. (Partially coloured) 27.7 cm. × 22 cm. 19th century	Provincial
194.	R.395	Maharaja Ranjit Singh of Punjab with a lady. Display 19th century	Provincial

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Sl. No.	Acc No.	Description and size	School
195.	R.14502	A poet smoking hookah 21 cm. × 15 cm. 19th century Lucknow. Nahar collection	Provincial
196.	R.14552	A king with an archer and a female attendant 23 cm. × 11 cm. 19th century Lucknow. Nahar collection	Provincial
197.	R.14550	A queen 35.7 cm. × 19.8 cm. 19th century Lucknow. Nahar collection	Provincial
198.	R.14542	A king with bow, quiver, shield and sword with an attendant 34.1 cm. × 25 cm. 19th century Lucknow. Nahar collection	Provincial
199.	R.14543	A bearded king. 32.5 cm. × 25.4 cm. 19th century Lucknow. Nahar collection	Provincial
200.	R.14547	A queen with a female attendant fanning her 33 cm. × 24.4 cm. 19th century Lucknow. Nahar collection	Provincial
201.	R.14551	A king 34 cm. × 20 cm. 19th century Lucknow. Nahar collection	Provincial
202.	R.14549	A princess with attendants. 32.5 cm. × 25 cm. 19th century Lucknow. Nahar collection	Provincial

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Sl. No.	Acc No.	Description and size	School
203.	R.14562	A princess holding a parrot with a female attendant 27.1 cm. × 20 cm. 19th century Lucknow. Nahar collection	Provincial
204.	R.14557	A princess looking at a mirror with an attendant 27.6 cm. × 21.2 cm. 19th century Lucknow. Nahar collection	Provincial
205.	R.14561	A nawab listening to a *dholak* player 27.3 cm. × 20.2 cm. 19th century Lucknow. Nahar collection	Provincial
206.	R.14545	A king with a messenger holding a *firman* before him. 32 cm. × 24.8 cm. 19th century Lucknow. Nahar collection	Provincial
207.	R.14560	A queen with two female attendants 28 cm. × 20 cm. 19th century Lucknow. Nahar collection	Provincial
208.	R.14546	A queen listing to music 33 cm. × 24.8 cm. 19th century Lucknow. Nahar collection	Provincial
209.	R.14451	Two noblemen 32.6 cm. × 22.8 cm. 19th century Lucknow. Nahar collection	Provincial
210.	R.14558	A queen. 30 cm. × 20 cm. 19th century Lucknow. Nahar collection	Provincial

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Sl. No.	Acc No.	Description and size	School
211.	R.14556	A king 28.5 cm. × 19.5 cm. 19th century Lucknow. Nahar collection	Provincial
212.	R.14548	A queen with an attendant carrying a tray with flowers 33 cm. × 25 cm. 19th century Lucknow. Nahar collection	Provincial
213.	R.14555	A king with an attendant fanning him 28.3 cm. × 19.4 cm. 19th century Lucknow. Nahar collection	Provincial
214.	R.14544	A king with a soldier before him 33.2 cm. × 24.7 cm. 19th century Lucknow. Nahar collection	Provincial
215.	R.14554	A nawab smoking hookah with an attendant 28.3 cm. × 20 cm. 19th century Lucknow. Nahar collection	Provincial
216.	At/71/39	Painted wooden bookcover showing religious discourse. Display *c.* 19th century	Provincial
217.	R.81	Krishna and Gopies. Display 19th century Murshidabad.	Provincial
218.	14277	Chaitanya. Display 19th century Murshidabad.	Provincial
219.	R.14878	Lovers. Display 19th century Murshidabad.	Provincial
220.	R.169	A saint with fairies. Display 19th century Murshidabad.	Provincial

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Sl. No.	Acc No.	Description and size	School
221.	R.606	Rasamandala. Display 19th century Murshidabad.	Provincial
222.	R.At/90/1096	A man offering food to a young Yogi 19.2 cm. × 14.7 cm. 19th century Lucknow	Provincial
223.	R.At/92/1547	Radha and Krishna 32 cm. × 23 cm. 19th century Lucknow	Provincial
224.	R.14553	Md. Farrukh Mir Bahadur Badshah enjoying music. Display 19th century Lucknow. Nahar collection.	Provincial
225.	R.—	A queen going a hunting on an elephant, (Studded with semi-precious stones) 43.5 cm. × 29.5 cm.	Provincial
226.	R.At/87/771	Flight of Buraq to heavan 34 cm. × 22.3 cm. 18/19th century	Provincial
227.	R.14184	A Muslim army on the march 52 cm. × 42 cm. *c.* 19th century	Provincial
228.	R.—	Pencil sketch of a fort and an army on the march 58 cm. × 42 cm. 19th century 64 cm. × 54 cm. Badly damaged	Provincial
229.	R.At/81/286	Paintings on both sides. Obverse : Serai scene. Reverse : Holi festival with inebriated men and women with squirts. 22.5 cm. × 11.5 cm. 19th century	Provincial

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Sl. No.	Acc No.	Description and size	School
230.	R.At/90/1294	Rama and Sita in court with others 81 cm. × 50 cm. 19th century Orissa.	Provincial
231.	14559	Bardar banu 28.5 cm. × 19.7 cm. 19th century Lucknow. Nahar collection	Provincial
232.	190/629	A serai scene. A recumbent man on a cot with retainers. A woman preparing roti on a platform. The men are armed with swords and pistols 38.8 cm. × 29 cm. 19th century	Provincial
233.	547/671	Portrait of a Sikh (?) horserider 30 cm. × 23.6 cm. 19th century	Provincial
234.	14123/669	A nobleman holding a *baaz* and smoking hookah that is being held by his attendant A *syce* in front conversing with him 31 cm. × 20 cm. *c.* 1770-80 A.D.	Provincial

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Sl. No.	Acc No.	Description and size	School
1.	R.At/68/20	Comical painting 30 cm. × 25.3 cm. Late 18th or early 19th century	Pahari
2.	R.At/86/705	A royal hunt 39.5 cm. × 33.2 cm. Late 18th or early 19th century	Pahari
3.	R.At/71/48	Shiva, Durga and Ganesha 22 cm. × 16.5 cm. Late 18th or early 19th century	Pahari
4.	R.At/66/6	Dhenukasurabadh 16.8 cm. × 14.2 cm. Late 18th or early 19th century	Pahari
5.	R.259/S.691	A four-armed Devi on a lion 27.2 cm. × 19.3 cm. Late 18th or early 19th century	Pahari
6.	R.13127/S.658	A falconer 10.3 cm. × 10.5 cm. Late 18th or early 19th century	Pahari
7.	R.13137/S.693	Shiva, Uma, Ganesha, Kartikeya and the bull Nandin 18.6 cm. × 15.4 cm. Late 18th or early 19th century	Pahari
8.	R.13134/S.685	Vishnu on Garuda 25.2 cm. × 12.2 cm. Late 18th or early 19th century	Pahari
9.	R.252/S.683	Child Krishna and Balarama with Nanda, Yashoda and others 23.5 cm. × 17 cm. Late 18th or early 19th century	Pahari
10.	R.-/S.636	A lady writing a letter 26.3 cm. × 20 cm. Late 18th or early 19th century	Pahari
11.	R.485/S.638	A lady with deer and birds 19 cm. × 13 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
12.	R.592/S.687	Vishnu bringing out Airavata 25 cm. × 17.4 cm. Late 18th or early 19th century	Pahari
13.	R.13120/S.673	Jaswant Singh 17 cm. × 15.4 cm. Late 18th or early 19th century	Pahari
14.	R.400/S.696	An elephant laving Lakshmi 15.2 cm. × 12.3 cm. Late 18th or early 19th century	Pahari
15.	R.14387/S.692	A lady with a maid 28.2 cm. × 22.8 cm. Late 18th or early 19th century	Pahari
16.	R.13136/S.688	Mahisasuramardini 22 cm. × 20.4 cm. Late 18th or early 19th century	Pahari
17.	R.13147/S.682	Radha taking tolls from Krishna 21 cm. × 17 cm. Late 18th or early 19th century	Pahari
18.	R.13138/S.697	Shiva, Uma, Ganesha and Kartikeya 22.2 cm. × 19 cm. (damaged) Late 18th or early 19th century	Pahari
19.	R.13143/S.654	Profile of a man 11 cm. × 8.7 cm. Late 18th or early 19th century	Pahari
20.	R.13262/S.634	Elopement 28.7 cm. × 22.8 cm. Late 18th or early 19th century	Pahari
21.	R.391/S.644	Radha with deer. Krishna peeping from a window 24.5 cm. × 15.5 cm. Late 18th or early 19th century	Pahari
22.	R.13159/S.686	Radha and Krishna (damaged) 23.6 cm. × 16.4 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
23.	R.269/S.645	A lady with an attendant 28.2 cm. × 21 cm. Late 18th or early 19th century	Pahari
24.	R.13175/S.667	Bust profile of a man 15 cm. × 12.6 cm. Late 18th or early 19th century	Pahari
25.	R.13123/S.676	Mian Zalim Singh of Mandi 14.3 cm. × 9 cm. Late 18th or early 19th century	Pahari
26.	R.160/S.478	A lady playing veena to deer 17 cm. × 10 cm. Late 18th or early 19th century	Pahari
27.	R.14324/S.610	A lady with a bird 17 cm. × 9.7 cm. Late 18th or early 19th century	Pahari
28.	R.390/S.620	Guru Nanak listening to music 29.3 cm. × 22.6 cm. Late 18th or early 19th century	Pahari
29.	R.392/S.196	Guru Nanak listening to music 29.3 cm. × 19.4 cm. Late 18th or early 19th century	Pahari
30.	R.14244/S.548	Aniruddha Chand Katoch, king of Kangra 27.5 cm. × 20.2 cm. Late 18th or early 19th century	Pahari
31.	R.13350/S.527	A lady with a wine cup and surahi 14.5 cm. × 9 cm. Late 18th or early 19th century	Pahari
32.	R.85/S.530	A seated lady. Persian inscription at the back 31.5 cm. × 24.5 cm. Late 18th or early 19th century	Pahari
33.	R.14389/S.528	Portrait of Jaiswal Abhran Singh 25.5 cm. × 20 cm. Late 18th or early 19th century	Pahari
34.	R.14243/S.547	A nobleman 25 cm. × 16.5 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
35.	R.368/S.616	Guru Nanak listening to music 35 cm. × 24.2 cm. Late 18th or early 19th century	Pahari
36.	R.82/S.600	Brahma paying obeisance to Krishna 29.5 cm. × 23 cm. Late 18th or early 19th century	Pahari
37.	R.107/S.576	A king with attendants. Lower register : a hermit with men and women. (Unfinished painting with names of colours written down) 30.5 cm. × 23.4 cm. Late 18th or early 19th century	Pahari
38.	R.594/S.575	A lady with a cow and calf 26.2 cm. × 15.4 cm. Late 18th or early 19th century	Pahari
39.	R.14297/S.544	A Muslim gentleman with a sword and pistol with damascened hilt 27.5 cm. × 16.8 cm. Late 18th or early 19th century	Pahari
40.	R.14382/S.539	A nobleman pouring water from a surahi with attendants 31.2 cm. × 21.3 cm. Late 18th or early 19th century	Pahari
41.	R.14384/S.525	Ladies in a row. Inscription at the back 20.4 cm. × 14.5 cm. Late 18th or early 19th century	Pahari
42.	R.434/S.597	Rama as Vishnu with Lava and Kusha 33.5 cm. × 23.5 cm. Late 18th or early 19th century	Pahari
43.	R.9027/S.942	Vasudeva stealing child Krishna 34.7 cm. × 25.5 cm. Late 18th or early 19th century	Pahari
44.	R.103/S.573	Vishnu blessing a general (Unfinished painting) 29.2 cm. × 23.6 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
45.	R.13139/S.594	Vishnu with Lakshmi and Gadapurusha and Chakrapurusha 27.2 cm. × 23.7 cm. Late 18th or early 19th century	Pahari
46.	R.14187/S.566	A king of Kangra 22 cm. × 19.6 cm. Late 18th or early 19th century	Pahari
47.	R.14190/S.584	Balwant Singh on horse with a hawk 21 cm. × 16.5 cm. Late 18th or early 19th century	Pahari
48.	R.79 A.G/S.618	Lava and Kusha with Valmiki 26 cm. × 19.7 cm. Late 18th or early 19th century	Pahari
49.	R.14326/S.608	A prince and a princess on a terrace 25.5 cm. × 19.5 cm. Late 18th or early 19th century	Pahari
50.	R.13133/S.622	Two noblemen in a hermitage 23.5 cm. × 18.7 cm. Late 18th or early 19th century	Pahari
51.	R.14167/S.601	Raja Balbir Sen of Mandi 19.2 cm. × 15.2 cm. Late 18th or early 19th century	Pahari
52.	R.454/S.580	A prince and a horse (Unfinished) 20.3 cm. × 13.4 cm. Late 18th or early 19th century	Pahari
53.	R.14162/S.562	A prince with an attendant 28.7 cm. × 21.9 cm. Late 18th or early 19th century	Pahari
54.	R.595/S.595	Vishnu and Lakshmi with devotees 24.5 cm. × 18.5 cm. Late 18th or early 19th century	Pahari
55.	R.13290/S.614	Rishyasringa with women 30.9 cm. × 23.9 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
56.	R.13169/S.604	Rama, Sita and Lakshmana with sages 28.9 cm. × 23.2 cm. Late 18th or early 19th century	Pahari
57.	R.13170/S.607	Rama, Lakshman and Sita with sages 31 cm. × 24.2 cm. Late 18th or early 19th century	Pahari
58.	R.70/S.606	Krishna with Gopies 33.2 cm. × 25.5 cm. Late 18th or early 19th century	Pahari
59.	R.270/S.596	Rama and Sita holding court 31.5 cm. × 19 cm. Late 18th or early 19th century	Pahari
60.	R.99/S.589	A king and a queen with visitors 29.5 cm. × 24 cm. Late 18th or early 19th century	Pahari
61.	R.109/S.583	An army (Unfinished) 29.5 cm. × 24 cm. Late 18th or early 19th century	Pahari
62.	R.97/S.593	A king and a queen with a female visitor 30.2 cm. × 24 cm. Late 18th or early 19th century	Pahari
63.	R.240 A.G./S.585	A king at his palace window enjoying a display of fireworks 23 cm. × 17 cm. Late 18th or early 19th century	Pahari
64.	R.14164/S.568	Portrait of a man (Unfinished) 14.2 cm. × 12.3 cm. Late 18th or early 19th century	Pahari
65.	R.14192/S.570	Raja Todarmal seated on a chair 13.5 cm. × 11.7 cm. Late 18th or early 19th century	Pahari
66.	R.425/S.564	A tribal family on the move 27.5 cm. × 21 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
67.	R.101A.G./S.569	Rishyasringa with women 30 cm. × 24 cm. Late 18th or early 19th century	Pahari
68.	R.238/S.567	Comical portrait of a tribal couple Reverse : frontal portrait of a man with horoscope 23.2 cm. × 16 cm. Late 18th or early 19th century	Pahari
69.	R.110/S.579	A general with his army before a Vishnu temple (Unfinished) 29.5 cm. × 24 cm. Late 18th or early 19th century	Pahari
70.	R.14186/S.563	A hookah smoking nobleman 20.6 cm. × 18 cm. Late 18th or early 19th century	Pahari
71.	R.13291/S.613	Rishyasringa with his guru and women 30.2 cm. × 23.5 cm. Late 18th or early 19th century	Pahari
72.	R.14228/S.598	A lady enjoying music 18.7 cm. × 12.4 cm. Late 18th or early 19th century	Pahari
73.	R.172/S.599	Rukminiharana 43 cm. × 28.3 cm. Late 18th or early 19th century	Pahari
74.	R.134A.G./S.591	A king and a queen listening to a woman's petition 30 cm. × 24 cm. Late 18th or early 19th century	Pahari
75.	R.271/S.611	Rama, Lakshmana and Sita in a hermitage 38.2 cm. × 29.2 cm. Late 18th or early 19th century	Pahari
76.	R.242A.G./S.621	Two nobles before a hermit 29 cm. × 19.4 cm. Late 18th or early 19th century	Pahari
77.	R.13472/S.609	Vishnu and Vamana avatara 32 cm. × 24 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
78.	R.264/S.571	A woman giving water to a tribal. Other tribals camping around 30.2 cm. × 22 cm. Late 18th or early 19th century	Pahari
79.	R.244/S.605	A nobleman and another man with a swollen throat before a sage 30 cm. × 25.3 cm. Late 18th or early 19th century	Pahari
80.	R.14391/S.578	A king in the company of noblemen. Borders decorated with Shivalingams 29.3 cm. × 23.4 cm. Late 18th or early 19th century	Pahari
81.	R.93/S.586	Vrihannala and prince Uttara defeating the Kaurav army (Unfinished colouring) 29.9 cm. × 23.9 cm. Late 18th or early 19th century	Pahari
82.	R.14112/S.641	A lady with a peacock 25.5 cm. × 20.2 cm. Late 18th or early 19th century	Pahari
83.	R.14166/S.617	A nobleman 18.6 cm. × 15.5 cm. Late 18th or early 19th century	Pahari
84.	R.105A.G./S.565	A sage and a royal personage with two women (Unfinished colouring) 29.5 cm. × 24 cm. Late 18th or early 19th century	Pahari
85.	R.At/90/S.1371	A charioteer before a king and his retinue 28.5 cm. × 18.3 cm. Late 18th or early 19th century	Pahari
86.	R.At/90/S.1104	Krishna and Balarama killing Kamsa 33 cm. × 33 cm. Late 18th or early 19th century	Pahari
87.	R.At/90/S.1105	Rama fighting with Kumbhakarna 48 cm. × 37.5 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
88.	R.At/66/5	Vishnu and Lakshmi 15 cm. × 9 cm. Late 18th or early 19th century	Pahari
89.	R.226/S.766	Krishna and Gopies (Unfinished) 30 cm. × 24.2 cm. Late 18th or early 19th century	Pahari
90.	R.234A.G/800	Rustics making mirth (Unfinished) 36.2 cm. × 25.5 cm. Late 18th or early 19th century	Pahari
91.	R.13097/S.805	An army on the march (Unfinished) 30.5 cm. × 24.5 cm. Late 18th or early 19th century	Pahari
92.	R.233A.G./S.808	Vishnu in a palace (Unfinished) 35.5 cm. × 26.5 cm. Late 18th or early 19th century	Pahari
93.	R.13109/S.787	Radha in the presence of two messengers (Unfinished) 24.6 cm. × 28 cm. Late 18th or early 19th century	Pahari
94.	R.340/S.761	Ganesha (Unfinished) 23 cm. × 15.4 cm. Late 18th or early 19th century	Pahari
95.	R.13044/S.774	A swooning Radha with two female attendants (Unfinished) 21 cm. × 14 cm. Late 18th or early 19th century	Pahari
96.	R.246/S.775	Two yogis with female devotees (Unfinished) 25.5 cm. × 18.5 cm. Late 18th or early 19th century	Pahari
97.	R.501A.G./S.768	A prince and a princess enjoying music (Unfinished) 23 cm. × 16 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
98.	R.13163/S.762	Ganesha eating laddu. (Unfinished) 22.2 cm. × 17 cm. Late 18th or early 19th century	Pahari
99.	R.13037/S.777	Two girls conversing. (Unfinished) 25.2 cm. × 17.2 cm. Late 18th or early 19th century	Pahari
100.	R.13047/S.789	A lady smoking hookah with two female attendants. (Unfinished) 18.3 cm. × 25.5 cm. Late 18th or early 19th century	Pahari
101.	R.13051/S.785	A girl with a pitcher in a street (Unfinished) 16 cm. × 25 cm. Late 18th or early 19th century	Pahari
102.	R.243/S.767	A lady with an attendant at a palace gate by a river. (Unfinished) 28.4 cm. × 20.6 cm. Late 18th or early 19th century	Pahari
103.	R.13144/S.790	A girl offering water to a soldier. (Unfinished) 29.3 cm. × 22.5 cm. Late 18th or early 19th century	Pahari
104.	R.13107/S.755	A prince and a princess inside a palace (Unfinished) 25 cm. × 29 cm. Late 18th or early 19th century	Pahari
105.	R.13108/S.796	Two ladies conversing inside a palace (Unfinished) 24 cm. × 29 cm. Late 18th or early 19th century	Pahari
106.	R.13034/S.940	Child Krishna has broken a pitcher (Unfinished) Late 18th or early 19th century	Pahari
107.	R.247A.G./S.784	Females playing music. (Unfinished) 22.2 cm. × 27.6 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
108.	R.13157/S.763	Radha and Krishna under an umbrella 16.5 cm. × 21.2 cm. Late 18th or early 19th century	Pahari
109.	R.13161/S.759	Radha attended by maids. (Unfinished) 26.7 cm. × 19.7 cm. Late 18th or early 19th century	Pahari
110.	R.13048/S.799	Krishna on bed and Radha going out. (Unfinished) 21 cm. × 15 cm. Late 18th or early 19th century	Pahari
111.	R.261/S.794	Krishna meeting Nanda. (Unfinished) 29.7 cm. × 21 cm. Late 18th or early 19th century	Pahari
112.	R.13034/S.757	A prince and a princess on a terrace. (Unfinished) 25.4 cm. × 19 cm. Late 18th or early 19th century	Pahari
113.	R.245/758	A prince and a princess on a terrace with attendants. (Unfinished) 22.5 cm. × 18 cm. Late 18th or early 19th century	Pahari
114.	R.13110/S.793	A male messenger before a heroine (line-drawing) 28.3 cm. × 24.2 cm. Late 18th or early 19th century	Pahari
115.	R.13050/S.788	A couple on a grazing ground 20.4 cm. × 14.4 cm. Late 18th or early 19th century	Pahari
116.	R.13112/S.770	Krishna with cowherds. Radha in her palace listening to a messenger. (line-drawing) 28.4 cm. × 22.2 cm. Late 18th or early 19th century	Pahari
117.	R.13095/S.802	Kings holding courts inside forts. (line-drawing) 30.2 cm. × 28.6 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
118.	R.14921/S.911	A lady smoking hookah. Another smelling a flower. (line-drawing) 28.5 cm. × 24.2 cm. Late 18th or early 19th century	Pahari
119.	R.13165/S.792	Lifting of mount Govardhana 30 cm. × 22.4 cm. Late 18th or early 19th century	Pahari
120.	R.13111/S.756	A romantic couple. (Only priming done) 29 cm. × 21.7 cm. Late 18th or early 19th century	Pahari
121.	R.13158/S.764	A scene of Holi festival. (Only priming done) 24.6 cm. × 18 cm. Late 18th or early 19th century	Pahari
122.	R.456/S.941	Two ladies. (line-drawing) 22.7 cm. × 13.6 cm. Late 18th or early 19th century	Pahari
123.	R.13166/S.778	Radha with attendants. (Only priming done) 19.3 cm. × 12.6 cm. Late 18th or early 19th century	Pahari
124.	R.13038/S.783	Radha with a messenger. (Only priming done) 26.5 cm. × 22.2 cm. Late 18th or early 19th century	Pahari
125.	R.13036/S.782	Krishna watching Radha inside a palace (Only priming done) 26.5 cm. × 22.2 cm. Late 18th or early 19th century	Pahari
126.	R.503A.G./S.795	Anantasayin Vishnu with Lakshmi Reverse : a royal procession (Partial priming done) 32 cm. × 24.7 cm. Late 18th or early 19th century	Pahari
127.	R.255/S.769	A prince being congratulated by his subjects on the birth of a child. (Partially coloured) 29.7 cm. × 21 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
128.	R.13042/S.809	Radha being consoled. (Names of colours written down) 23 cm. × 14.2 cm. Late 18th or early 19th century	Pahari
129.	R.13043/S.786	Half-dressed Radha on the bed Reverse : a woman looking at a deer With inscription. (Partially coloured) 24.9 cm. × 14.8 cm. Late 18th or early 19th century	Pahari
130.	R.13052/S.760	An ascetic paying homage to Shiva and his family 24.5 cm. × 18.8 cm. Late 18th or early 19th century	Pahari
131.	R.14892/S.882	An ascetic on a tiger-skin 15.6 cm. × 10 cm. Late 18th or early 19th century	Pahari
132.	R.13101/S.804	A court and a prince on horseback (line-drawing) 30.5 cm. × 24.6 cm. Late 18th or early 19th century	Pahari
133.	R.488A.G./S.798	Lovers. Reverse : noblemen on chariots with rustics along them. (Partially coloured) 18 cm. × 12.4 cm. Late 18th or early 19th century	Pahari
134.	R.248/S.807	Child Krishna and Balarama in Nanda's household 36.2 cm. × 25.5 cm. Late 18th or early 19th century	Pahari
135.	R.235A.G./S.803	Vasudeva stealing away child Krishna from Kamsa's prison 36 cm. × 25.2 cm. Late 18th or early 19th century	Pahari
136.	R.262A.G./S.806	Vasudeva with pregnant Devaki 36.2 cm. × 26 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
137.	R.13164/S.765	The Holi festival 28.6 cm. × 22 cm. Late 18th or early 19th century	Pahari
138.	R.13115/S.813	Vali and Sugriva fighting 30.5 cm. × 25 cm. Late 18th or early 19th century	Pahari
139.	R.13117/S.815	Abhimanyu fighting 31 cm. × 26.5 cm. Late 18th or early 19th century	Pahari
140.	R.251A.G./S.814	King and queen playing chaupar 40 cm. × 27 cm. Late 18th or early 19th century	Pahari
141.	R.365A.G./S.791	Scene of a palace festival 30.3 cm. × 25.5 cm. Late 18th or early 19th century	Pahari
142.	R.13088/S.797	A battle scene 30.4 cm. × 24.3 cm. Late 18th or early 19th century	Pahari
143.	R.13080/S.812	Hanumana brought as a prisoner before Ravana 35 cm. × 25 cm. Late 18th or early 19th century	Pahari
144.	R.13116/S.818	The battle of Kurukshetra 32 cm. × 26.5 cm. Late 18th or early 19th century	Pahari
145.	R.254/S.948	A man and a woman as singers bowing inside a court 40.6 cm. × 29.7 cm. Late 18th or early 19th century	Pahari
146.	R.13162/S.851	Women engaged in toilette 29 cm. × 24.5 cm. Late 18th or early 19th century	Pahari
147.	R.13082/S.810	Sita in Ashokakanana 35.5 cm. × 21.5 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
148.	R.13084/S.811	Sita in Ashokakanana 34.5 cm. × 25.2 cm. Late 18th or early 19th century	Pahari
149.	R.508/S.828	A lady feeding a crane. Pencil sketch 20.7 cm. × 16.8 cm. Late 18th or early 19th century	Pahari
150.	R.500/S.836	Asavari Ragini. Ink-sketch 23 cm. × 16.2 cm. Late 18th or early 19th century	Pahari
151.	R.510/S.832	A woman riding a goat. Names of colours written down 21 cm. × 16.8 cm. Late 18th or early 19th century	Pahari
152.	R.13151/S.841	Maharaja Samsar Singh of Guler with gun on horseback 25.6 cm. × 18.5 cm. Late 18th or early 19th century	Pahari
153.	R.512/S.829	Lady with a deer. Line sketch 21.3 cm. × 15 cm. Late 18th or early 19th century	Pahari
154.	R.13184/S.856	Child Krishna and Balarama with Nanda and Yashoda (line-drawing, partially coloured) 23 cm. × 18 cm. Late 18th or early 19th century	Pahari
155.	R.506/S.823	A seated lady playing veena (line-drawing, name of colours written down) 21.5 cm. × 14.7 cm. Late 18th or early 19th century	Pahari
156.	R.443/S.850	A male begger with a bird on his head with a female begger (line-drawing, damaged) 26.3 cm. × 15.3 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
157.	R.465/S.838	Rama and Sita on thorne with Hanumana and Lakshmana. Reverse : same scene Pencil sketch 21.5 cm. × 17.3 cm. Late 18th or early 19th century	Pahari
158.	R.258/S.854	Shiva and Chandi dancing. (Partially coloured) 27 cm. × 21.5 cm. Late 18th or early 19th century	Pahari
159.	R.260/S.855	Several men and women performing household chores. (Partially coloured) 23.2 cm. × 19 cm. Late 18th or early 19th century	Pahari
160.	R.14884/S.874	Scene inside a hermitage (line-drawing) 22.2 cm. × 16.2 cm. Late 18th or early 19th century	Pahari
161.	R.14913/S.903	Mahisasuramardini. (Partially coloured) 16.5 cm. × 14 cm. Late 18th or early 19th century	Pahari
162.	R.13082/S.810	Hanumana with Sita in captivity (Partially primed) 35.5 cm. × 25.5 cm. Late 18th or early 19th century	Pahari
163.	R.13084/S.811	Sita with Chedies in captivity (line-drawing) 35 cm. × 25.3 cm. Late 18th or early 19th century	Pahari
164.	R.13162/S.851	A lady engaged in toilette with two attendants. (Partially coloured) 29.3 cm. × 24.4 cm. Late 18th or early 19th century	Pahari
165.	R.13080/S.812	Hanumana brought as a prisoner before Ravana. (line-drawing, damaged) 34.5 cm. × 25 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
166.	R.13116/S.818	Abhimanyu entering the enemies' circles (line-drawing) 31.7 cm. × 26.2 cm. Late 18th or early 19th century	Pahari
167.	R.254/S.948	A couple bowing before royals at a court. (Primed) 40.5 cm. × 29.5 cm. Late 18th or early 19th century	Pahari
168.	R.248/S.807	Child Krishna and Balarama in Nanda's household (line-drawing) 36 cm. × 21.5 cm. Late 18th or early 19th century	Pahari
169.	R.14883/S.873	Shiva and Uma with their offspring and retinue. (Partially coloured, damaged) 32.5 cm. × 24.2 cm. Late 18th or early 19th century	Pahari
170.	R.235A.G./S.803	Vasudeva stealing away child Krishna from Kamsa's prison 36 cm. × 25.4 cm. Late 18th or early 19th century	Pahari
171.	R.13088/S.797	Two armies facing each other before a fort 30.5 cm. × 24 cm. Late 18th or early 19th century	Pahari
172.	R.365/S.791	Investiture ceremony of a prince (Partially coloured) 35.2 cm. × 27.5 cm. Late 18th or early 19th century	Pahari
173.	R.251A.G/S.814	A prince and a princess playing chaupar (Partially coloured) 40 cm. × 27 cm. Late 18th or early 19th century	Pahari
174.	R.13117/S.815	Abhimanyu fighting inside the enemies' circles (line-drawing) 30.5 cm. × 26.5 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
175.	R.13115/S.813	Bali and Sugriva fighting. (Partially coloured with names of colours written down) 30.5 cm. × 25.9 cm. Late 18th or early 19th century	Pahari
176.	R.13164/S.765	Krishna playing Holi (line-drawing) 28.5 cm. × 28 cm. Late 18th or early 19th century	Pahari
177.	R.262A.G./S.806	A sadhu and a pregnant woman inside a castle. Gods pay their obeisance 36 cm. × 25.9 cm. Late 18th or early 19th century	Pahari
178.	R.170/S.345	A king with his retinue enjoying a nautch 42.5 cm. × 35.4 cm. Late 18th or early 19th century	Pahari
179.	R.306/S.347	A king smoking hookah and enjoying music by female performers inside harem 42.2 cm. × 35.4 cm. Late 18th or early 19th century	Pahari
180.	R.13119/S.670	A nobleman before king Samsar Chand of Kangra 15.5 cm. × 17.2 cm. Late 18th or early 19th century	Pahari
181.	R.354/S.372	A bare-breasted lady putting lacquer at her feet 32.3 cm. × 23 cm. Late 18th or early 19th century	Pahari
182.	R.14919/S.909	Radha and Krishna before twin trees by a river 22.8 cm. × 19.5 cm. Late 18th or early 19th century	Pahari
183.	R.432/S.376	Three ladies in a valley surrounded by hills 17.2 cm. × 12.2 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
184.	R.13060	Rama's army crossing over to Lamka (line-drawing) 34.7 cm. × 24.6 cm. Late 18th or early 19th century	Pahari
185.	R.13065	Rama's army bridging the sea (line-drawing) 34.2 cm. × 25 cm. Late 18th or early 19th century	Pahari
186.	R.472	An eight-armed Hanumana carrying the Gandhamadana hill (line-drawing) 42.5 cm. × 25.2 cm. Late 18th or early 19th century	Pahari
187.	R.13091	Sultan Alauddin's army before a Rajput fort (line-drawing) 30.4 cm. × 25 cm. Late 18th or early 19th century	Pahari
188.	R.13064	Rama's army about to cross the ocean (line-drawing, damaged) 34.5 cm. × 25.2 cm. Late 18th or early 19th century	Pahari
189.	R.9016	Ravana comes to meet Sita in captivity 35.5 cm. × 25.5 cm. Late 18th or early 19th century	Pahari
190.	R.13073	Rama's monkey army leaping before a fort (line-drawing, damaged) 35.2 cm. × 24.5 cm. Late 18th or early 19th century	Pahari
191.	R.13066	Samudra paying obeisance to Rama (line-drawing, damaged) 34.5 cm. × 24 cm. Late 18th or early 19th century	Pahari
192.	R. 515	Krishna tied to a mortar before Nanda and others (line-drawing, damaged) 30.4 cm. × 22 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
193.	R.492	Rama and Lakshmana on a chariot before the personified ocean-god (line-drawing, damaged) 30.2 cm. × 23.5 cm. Late 18th or early 19th century	Pahari
194.	R.409	Rama and Lakshmana in a hermitage (line-drawing) 36.8 cm. × 27.5 cm. Late 18th or early 19th century	Pahari
195.	R.13058	Rama and Lakshmana with the monkey army before Lamka (line-drawing, damaged) 35.5 cm. × 25 cm. Late 18th or early 19th century	Pahari
196.	R.9028/S.29	Mahisasuramardini 31.5 cm. × 23.7 cm. Late 18th or early 19th century	Pahari
197.	R.9026/S.31	Vamanaavatara and Bali 35 cm. × 26.5 cm. Late 18th or early 19th century	Pahari
198.	R.9023/S.27	Varahaavatara on Gaduda fighting with demons 35 cm. × 26.5 cm. Late 18th or early 19th century	Pahari
199.	R.13104	A king hunting with ladies (line-drawing) 30 cm. × 24.6 cm. Late 18th or early 19th century	Pahari
200.	R.13075	Monkeys in Lamka (line-drawing) 35 cm. × 24.5 cm. Late 18th or early 19th century	Pahari
201.	R.13071	Rama with his army before the ocean (line-drawing) 40.3 cm. × 27 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
202.	R.13089	Shatrughna and Bharata (line-drawing) 40.3 cm. × 27 cm. Late 18th or early 19th century	Pahari
203.	R.13096	Sultan Alauddin facing a Rajput army 30.6 cm. × 24.7 cm. Late 18th or early 19th century	Pahari
204.	R.493	A rishi before Krishna at Dwaraka (line-drawing) 30.5 cm. × 24.4 cm. Late 18th or early 19th century	Pahari
205.	R.13063	Rama's camp before Ravana's fort (line-drawing, damaged) 34.4 cm. × 25.2 cm. Late 18th or early 19th century	Pahari
206.	R.13070	Vibhishana comes to Ravana's court (line-drawing) 35.6 cm. × 25 cm. Late 18th or early 19th century	Pahari
207.	R.13061	Captive Rakshasas being brought before Rama (line-drawing) 34.6 cm. × 24.7 cm. Late 18th or early 19th century	Pahari
208.	R.13078	Hanumana before captive Sita (line-drawing, damaged) 33.5 cm. × 25.2 cm. Late 18th or early 19th century	Pahari
209.	R.13074	Monkeys before Rama and Lakshmana (line-drawing) 35 cm. × 25.5 cm. Late 18th or early 19th century	Pahari
210.	R.13068	Rama with monkey army before the ocean (line-drawing, damaged) 35.2 cm. × 24.7 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
211.	R.13106	A king is committing suicide before a Shivalingam inside a fort 30.5 cm. × 25 cm. Late 18th or early 19th century	Pahari
212.	R.G—489	Priests performing a ritual in a household (line-drawing) 30.5 cm. × 23.2 cm. Late 18th or early 19th century	Pahari
213.	R.13072	Hanumana with monkeys before Rama and Lakshmana in a forest (damaged) 34.7 cm. × 24.9 cm. Late 18th or early 19th century	Pahari
214.	R.13081	Hanumana fighting with Indrajeet and the rakshasas in the Lamka palace (line-drawing, damaged) 35 cm. × 25.2 cm. Late 18th or early 19th century	Pahari
215.	R.13046	While crossing the ocean Hanumana encounters an ogress 36.7 cm. × 26.2 cm. Late 18th or early 19th century	Pahari
216.	R.9035/S.26	Human body showing six yoga-chakras according to Yogabhashya 32.4 cm. × 22 cm. Late 18th or early 19th century	Pahari
217.	R.A.G.491	Karna and Bhima fighting at Kurukshetra (line-drawing) 30.3 cm. × 20.3 cm. Late 18th or early 19th century	Pahari
218.	R.13059	Rama with his army before Ravana's palace (line-drawing, damaged) 35.2 cm. × 25.3 cm. Late 18th or early 19th century	Pahari
219.	R.13067	Scenes showing Bharata in the palace of Ayodhya (line-drawing, damaged) 39.5 cm. × 27.6 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
220.	R.13093	Sultan Alauddin with his army before a Rajput fort (line-drawing) 30.4 cm. × 25.9 cm. Late 18th or early 19th century	Pahari
221.	R.514	Child Krishna breaking a Gopi's pitcher 30 cm. × 24.4 cm. Late 18th or early 19th century	Pahari
222.	R.13085	Hanumana inside Lamka palace at night (line-drawing, damaged) 35.3 cm. × 25.3 cm. Late 18th or early 19th century	Pahari
223.	R.13086	Hanumana with a mace approaching Lamka (line-drawing, damaged) 35 cm. × 25 cm. Late 18th or early 19th century	Pahari
224.	R.13090	A king's palace and an army coming out (line-drawing) 30.7 cm. × 25 cm. Late 18th or early 19th century	Pahari
225.	R.13077	Hanumana flying over the ocean (line-drawing, damaged) 35 cm. × 25.2 cm. Late 18th or early 19th century	Pahari
226.	R.9024	Nrisimhaavatara 36.2 cm. × 26.5 cm. Late 18th or early 19th century	Pahari
227.	R.13069	Vibhishana in front of Rama on the seashore (line-drawing, damaged) 35 cm. × 24 cm. Late 18th or early 19th century	Pahari
228.	R.-/S139	People paying obeisance to Balarama and Krishna on a chariot (damaged) 31 cm. × 26.3 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
229.	R.13183	Gods and goddesses paying homage to a three-eyed God (line-drawing) 28.3 cm. × 19 cm. Late 18th or early 19th century	Pahari
230.	R.494	A battle scene. Reverse : an army marching (line-drawing, names of colours written down) 27.5 cm. × 20.5 cm. Late 18th or early 19th century	Pahari
231.	R.13092	An army camp facing a fort with its king inside (line-drawing) 30.2 cm. × 24.6 cm. Late 18th or early 19th century	Pahari
232.	R.13062	Rama, Lakshmana, Samudra and the monkey army (line-drawing, damaged) 35.4 cm. × 25.2 cm. Late 18th or early 19th century	Pahari
233.	R.469	A court with an elephant army on one side. The other side shows people gossiping, bullock-carts, etc. (line-drawing, damaged) 29 cm. × 19.5 cm. Late 18th or early 19th century	Pahari
234.	R.13079	Captured Hanumana sets fire to Lamka (line-drawing, damaged) 35.5 cm. × 25.5 cm. Late 18th or early 19th century	Pahari
235.	R.430	A seated nobleman (line-drawing) 16.5 cm. × 8.5 cm. Late 18th or early 19th century	Pahari
236.	R.13185	A priest singing in a puja room (line-drawing) 21 cm. × 17.2 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
237.	R.13168	A young man seated with a flower (line-drawing) 12.9 cm. × 13 cm. Late 18th or early 19th century	Pahari
238.	R.507	A magician showing *'Bhanumati-ka-khel'* (line-drawing) 23.3 cm. × 16.2 cm. Late 18th or early 19th century	Pahari
239.	R.496	Child Krishna and Balarama playing about in Nanda's household (line-drawing) 28.9 cm. × 20.9 cm. Late 18th or early 19th century	Pahari
240.	R.13098	Sultan Alauddin in his camp with courtiers (line-drawing, a bit of priming) 29.5 cm. × 25 cm. Late 18th or early 19th century	Pahari
241.	R.13100	Shri Vishnu-pada-padma 14.5 cm. × 11 cm. Late 18th or early 19th century	Pahari
242.	R.-/S.135	A lady's face in profile (line-drawing) 7.5 cm. × 9.2 cm. Late 18th or early 19th century	Pahari
243.	R.-/S.134	Radha and Krishna. Reverse : a princess listening to musicians in harem (line-drawing) Late 18th or early 19th century	Pahari
244.	R.490	Krishna grinding mustard with the help of bullocks. Vishnu with devotees at the lower left corner (Charba drawing) 21.6 cm. × 16.8 cm. Late 18th or early 19th century	Pahari
245.	R.13177	Bust profile of a nobleman smoking hookah (line-drawing) 7.2 cm. × 4.7 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
246.	R.805	Krishna and Balarama killing wrestlers at Kamsa's court (line-drawing) 28.9 cm. × 21 cm. Late 18th or early 19th century	Pahari
247.	R.499	People paying obeisance to a king (line-drawing) 25.4 cm. × 18.7 cm. Late 18th or early 19th century	Pahari
248.	R.495	Gods paying obeisance to a four-armed goddess (line-drawing) 26.5 cm. × 17.3 cm. Late 18th or early 19th century	Pahari
249.	R.9033	Bandhaavatara 35 cm. × 23 cm. Late 18th or early 19th century	Pahari
250.	R.13049	On the birth of a child alms are being distributed (line-drawing) 24.7 cm. × 19.5 cm. Late 18th or early 19th century	Pahari
251.	R.9017	Hanumana meeting Sita in captivity 35.5 cm. × 25.2 cm. Late 18th or early 19th century	Pahari
252.	R.13083	Hanumana meeting Sita in captivity 35.2 cm. × 25 cm. Late 18th or early 19th century	Pahari
253.	R.13076	Hanumana meets Amgada by the seashore (line-drawing, damaged) 35.5 cm. × 24.5 cm. Late 18th or early 19th century	Pahari
254.	R.S.137	A nautch party at a court (line-drawing) 32.7 cm. × 23.4 cm. Late 18th or early 19th century	Pahari
255.	R.13087	Hindu and Muslim armies fighting outside a fort. Women committing 'Jauhar' inside the fort (line-drawing) 30.5 cm. × 24.5 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
256.	R.13113	Gopas with cows (line-drawing) 30 cm. × 25 cm. Late 18th or early 19th century	Pahari
257.	R.S.138	Brahma and Gopas paying homage to Vishnu (line-drawing) 30.5 cm. × 25.3 cm. Late 18th or early 19th century	Pahari
258.	R.S.9019	Krishna and Bhishma fighting at Kurukshetra 46.2 cm. × 39.7 cm. Late 18th or early 19th century	Pahari
259.	R.9022	Krishna killing Kamsa 40 cm. × 30.5 cm. Late 18th or early 19th century	Pahari
260.	R.14525	Utkanayika. (Display) Late 18th or early 19th century	Pahari
261.	R.404	Scene of a city. (Display) Late 18th or early 19th century	Pahari
262.	R.610	Hara-Parvati. (Display) Late 18th or early 19th century	Pahari
263.	R.13281	Child Krishna tied to a mortar. (Display) Late 18th or early 19th century	Pahari
264.	R.596	A scene of toilette. (Display) Late 18th or early 19th century	Pahari
265.	R.14875	Rama pining for Sita. (Display) Late 18th or early 19th century	Pahari
266.	R.239	Shiva on bull as archer. (Display) Late 18th or early 19th century	Pahari
267.	R.249	Raja Samsar Chand listening to music. (Display) Late 18th or early 19th century	Pahari
268.	R.654	Vasakasajjanayika. (Display) Late 18th or early 19th century	Pahari
269.	R.14212	Krishna and Balarama fighting at Kamsa's court. (Display) Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
270.	R.15031	Krishna's childhood exploits. (Display) Late 18th or early 19th century	Pahari
271.	R.13279	An hero eloping with heroine. (Display) Late 18th or early 19th century	Pahari
272.	R.14386	A lady in a graden. (Display) Late 18th or early 19th century	Pahari
273.	R.653	Radha and Krishna near a pool. (Display) Late 18th or early 19th century	Pahari
274.	R.14385	Krishna with Gopies. Bhagavatapurana. (Display) Late 18th or early 19th century	Pahari
275.	R.14245	A prince with two female attendants. Raga Mewar. (Display) Late 18th or early 19th century	Pahari
276.	R.14143	Balvant Singh smoking hookah. (Display) Late 18th or early 19th century	Pahari
277.	R.250	Balvant Sing and his retainers round a campfire. (Display) Late 18th or early 19th century	Pahari
278.	R.13266	Raja Ranjit Dev of Jammu with his grandsons. (Display) Late 18th or early 19th century	Pahari
279.	R.224	Portrait of artist Nainsukh. (Display) Late 18th or early 19th century	Pahari
280.	R.364A.G.	The dance of Shiva. (Display) Late 18th or early 19th century	Pahari
281.	R.15026	A prince and an attendant holding a fly-whisk Late 18th or early 19th century	Pahari
282.	R.At/87/752	A lady with attendants inside a palace 21.5 cm. × 15.6 cm. Late 18th or early 19th century	Pahari
283.	R.14475	A prince and a chauri-bearer 37.6 cm. × 30.1 cm. Late 18th or early 19th century	Pahari
284.	R.14477	A seated pundit 28 cm. × 22.5 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
285.	R.14512	Rama, Lakshmana and Sita. 15.5 cm. × 21.5 cm. Late 18th or early 19th century	Pahari
286.	R.14481	Krishna listening to Akrura. 33 cm. × 25 cm. Late 18th or early 19th century	Pahari
287.	R.At/87/780	The scene of Lamka war 43.6 cm. × 33.3 cm. Late 18th or early 19th century	Pahari
288.	R.At/87/784	A red god on a chariot 25 cm. × 20 cm. Late 18th or early 19th century	Pahari
289.	R.At/87/781	Lava and Kusha give defeat to Shatrughna's army 43.5 cm. × 33.5 cm. Late 18th or early 19th century	Pahari
290.	R.At/90/1103	Rama and Lakshmana with monkeys 28 cm. × 16.7 cm. Late 18th or early 19th century	Pahari
291.	R.At/73/167	Radha and Krishna shown in different sequences in a village 29.5 cm. × 21 cm. Late 18th or early 19th century	Pahari
292.	R.At/69/35	Nanda and Yasoda with child Krishna 26.7 cm. × 20.4 cm. Late 18th or early 19th century	Pahari
293.	R.At/73/212	A nobleman on horseback with retinue 22.2 cm. × 17.8 cm. Late 18th or early 19th century	Pahari
294.	R.1002	A city by a lake. (In frame) 1 m 47 cm × 40.5 cm. Late 18th or early 19th century	Pahari
295.	R.14476	Raga Meghamalhar. (Display) Late 18th or early 19th century Nahar collection	Pahari

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Sl. No.	Acc No.	Description and size	School
296.	R.14482	Krishna stealing butter. (Display) Late 18th or early 19th century Nahar collection	Pahari
297.	R.14480	Pigeon-feeders. (Display) Late 18th or early 19th century Nahar collection	Pahari
298.	R.9034	Twenty-four incarnations of Vishnu 29 cm. × 26.4 cm. Late 18th or early 19th century	Pahari
299.	R.13137/S.693	Shiva listening to music played by Uma, Kartikeya and Ganesha. Nandin listening 15.5 cm. × 18.5 cm. Late 18th or early 19th century	Pahari
300.	R.13136/S.688	Gods paying obeisance to Mahishasuramardini 22 cm. × 20.2 cm. Late 18th or early 19th century	Pahari
301.	R.401/S.679	Ganesha being fed laddu by a woman 18.5 cm. × 13.5 cm. Late 18th or early 19th century	Pahari
302.	R.82/S.600	Krishna with Gopas and Brahma talking to Gopas. Inscription with Devanagari script at the back 29.2 cm. × 22.7 cm. Late 18th or early 19th century	Pahari
303.	R.14299/S.536	Scene of Samudramanthana. Vishnu rising from ocean. 28.5 cm. × 14.2 cm. Late 18th or early 19th century	Pahari
304.	R.9036	Viratarupa of Vishnu 44.2 cm. × 33.2 cm. Late 18th or early 19th century	Pahari
305.	R.411	Kings paying obeisance to Vishnu and Lakshmi. (Charba, damaged) 96 cm. × 30 cm. Late 18th or early 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
306.	R.412	Rama's coronation. (Charba, damaged) 95.5 cm. × 30.5 cm. Late 18th or early 19th century	Pahari
307.	R.267	The scene of Holi. (Display) Late 18th or early 19th century	Pahari
308.	R.14875	Rama, Lakshmana and Sita. (Display) Late 18th or early 19th century	Pahari
309.	R.—	Radha cooking. (Display) Late 18th or early 19th century	Pahari
310.	R.14185	Raja Bhup Singh hunting with others 56 cm. × 33 cm. 19th century	Pahari
311.	R.14917/S.907	Vishnu with two ladies on the bank of a river 24.5 cm. × 19.8 cm. 19th century	Pahari
312.	R.14144/S.642	A nayika engaged in toilette 26 cm. × 15 cm. 19th century	Pahari
313.	R.592/S.687	Indra rescuing Airavata from the ocean 24.2 cm. × 17.5 cm. 19th century	Pahari
314.	R.13260/S.698	Shiva, Parvati and Nandin with the head of an elephant 17.7 cm. × 13.3 cm. 19th century	Pahari
315.	R.487/S.643	A queen smoking hookah being attended by ladies-in-wait 26 cm. × 20.5 cm. 19th century	Pahari
316.	R.268/S.630	Krishnabhisarika nayika 26.3 cm. × 21.3 cm. 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
317.	R.14298/S.650	Radha with a deer inside a palace while Krishna peeps from a balcony 24.2 cm. × 20 cm. 19th century	Pahari
318.	R.13118/S.677	Sri Raja Narodh Singh 17.3 cm. × 15.3 cm. 19th century	Pahari
319.	R.13343/S.633	A prince and a princess in bed with female attendants 26.6 cm. × 16.3 cm. 19th century	Pahari
320.	R.14121/S.651	A prince and a princess smoking hookahs 27.3 × 20.5 cm. 19th century	Pahari
321.	R.558/S.632	A lady talking to an old woman inside a palace 27.5 cm. × 18.3 cm. 19th century	Pahari
322.	R.424/S.695	Gajalakshmi 17.4 cm. × 13.3 cm. 19th century	Pahari
323.	R.13135/S.694	Shiva seated with trisul 22 cm. × 20.5 cm. 19th century	Pahari
324.	R.14122/S.657	A king smoking hookah 25 cm. × 18.5 cm. 19th century	Pahari
325.	R.13124/S.668	Ishwari Singh (?) smoking hookah 13.3 cm. × 10 cm. 19th century	Pahari
326.	R.13261/S.640	Vipralabdha nayika 20.7 cm. × 19.7 cm. 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
327.	R.13283/S.627	Ladies swimming 27.5 cm. × 19.2 cm. Late 18th century	Pahari
328.	R.13139/S.594	Vishnu and Lakshmi on throne with two other Vishnus attending them 27 cm. × 23.5 cm. 19th century	Pahari
329.	R.369/S.672	King Samsar Chand smoking hookah with an attendant 37.2 cm. × 28.5 cm. *c.* 1820/28 A..D.	Pahari
330.	R.598/S.640	A lady on a terrace feeding a parrot with two other attendants 28 cm. × 21 cm. 19th century	Pahari

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Sl. No.	Acc No.	Description and size	School
1.	R.At/81/326	An old man with a stick 11 cm. × 12.4 cm. Santhal *pata* Early 20th century	Manuscripts & Patas
2.	R.At/81/327	*Chakshudan* 32.5 cm. ×16.5 cm. Santhal *pata* Early 20th century	Manuscripts & Patas
3.	R.At/81/325	A dhoti-clad man 29 cm. × 22.6 cm. Santhal *pata* Early 20th century	Manuscripts & Patas
4.	R.At/85/649	An ogress with a goat 20 cm. × 12.4 cm. Santhal *pata* Early 20th century	Manuscripts & Patas
5.	R.At/81/323	Shiva accepting alms from Parvati 24 cm. × 34.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
6.	R.At/85/648	*Dhenukasurabadh* 27.5 cm. × 19.8 cm. 19th century	Manuscripts & Patas
7.	R.At/81/321	Husband massaging consort's foot 35.2 cm. × 27.8 cm. Kalighat *pata* 19th century	Manuscripts & Patas
8.	R.At/81/322	Yashoda, child Krishna and a cow 35.2 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
9.	R.At/81/329	A gnome 32 cm. × 10.4 cm. Santhal *pata* Early 20th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
10.	R.At/81/324	A seated lady 37.5 cm. × 27.2 cm. Kalighat *pata* 19th century	Manuscripts & Patas
11.	R.At/81/328	*Chakshudan* 22.5 cm. × 20.2 cm. Santhal *pata* Early 20th century	Manuscripts & Patas
12.	R.At/82/425	Uma—Maheshvara (damaged) 25.2 cm. × 35 cm. *Pata* Early 20th century	Manuscripts & Patas
13.	R.At/66/8	Vishnu 28 cm. × 18.7 cm. *Pata* 19th century	Manuscripts & Patas
14.	R.At/88/876	Rama and Sita in court (on cloth) 60.7 cm. × 30.5 cm. *Pata* 19th century	Manuscripts & Patas
15.	R.At/88/877	Rama, Lakshmana and Sita with Guhak Chandala 51.5 cm. × 31.2 cm. *Pata* 19th century	Manuscripts & Patas
16.	R.At/66/29	Pala MS. (i) A goddess with many arms and a Buddhist monk in the centre 32.5 cm. × 6 cm. Palm-leaf. 11-12th century (ii) A multi-armed black goddess with a Buddhist monk on each side 47.5 cm. × 5.7 cm. Palm-leaf. 11-12th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
17.	R.At/72.101	Pala MS. (i) A six-armed standing deity 31.2 cm. × 6.2 cm. Palm-leaf. (ii) A multi-armed standing fierce deity One foot red, the other white 31.4 cm. × 6.5 cm. (iii) A multi-armed seated goddess 31.5 cm. × 6.5 cm. (iv) A four-armed black dancing goddess 31.5 cm. × 6.5 cm. (v) A multi-armed and four-footed yellow goddess 31.5 cm. × 6.5 cm. (vi) A black dancing fierce goddess with multi-coloured hands and feet 31.5 cm. × 6.5 cm. (vii) A ten-armed yellow deity 31.5 cm. × 6.5 cm. (viii) A two-armed black dancing deity 31.5 cm. × 6.5 cm. 11-12th century	Manuscripts & Patas
18.	R.At/66/2	A palm-leaf folio. Mythological scenes on both sides. 29.2 cm. × 4.8 cm. Orissa 19th century	Manuscripts & Patas
19.	R.At/68/29	Pala MS. Palm-leaf. A multi-armed seated red goddess 35.5 cm. × 5.8 cm. 11-12th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
20.	R.At/68/29	Pala MS. Palm-leaf folio Black Buddha in *bhumisparsha* mudra 47.4 cm. × 5.8 cm. 11-12th century	Manuscripts & Patas
21.	R.At/72/101	Pala MS. Palm-leaf. A mulit-armed seated white deity 31.2 cm. × 6 cm. 11-12th century	Manuscripts & Patas
22.	R.10022/20	Hara-Parvati. 45.5 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
23.	R.10244/21	Shiva on Nandi. 45.2 cm. × 27.7 cm. Kalighat *pata* 19th century	Manuscripts & Patas
24.	R.10036	Ravana and Jatayu 45.2 cm. × 27.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
25.	R.10044	Krishna killing Bakasura 44.6 cm. × 27.3 cm. Kalighat *pata* 19th century	Manuscripts & Patas
26.	R.10243	Vishnu appearing like Kali raises his foot on Bali's head 45.5 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
27.	R.At/82/569	Yashoda with child Krishna on her lap. Modern Kalighat *pata* painting by Sirish Chandra Chitrakar 51 cm. × 34 cm. Kalighat *pata* 20th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
28.	R.10041	Krishna and Putana Rakshashi 43.5 cm. × 27.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
29.	R.10024	Jagaddhatri on lion 44.2 cm. × 27.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
30.	R.10242	Four-faced Brahma on a swan 45.3 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
31.	R.10037/47	Amgada taking on Ravana 45.5 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
32.	R.10249/94	Rama, Lakshmana, Sita and Hanumana. (damaged) 47 cm. × 33 cm. Kalighat *pata* 19th century	Manuscripts & Patas
33.	R.10052	A babu wearing *shamla* hat, *choga* and *chadar* 45.5 cm. × 27.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
34.	R.10049	Nrisimhaavatara killing Hiranyakashipu 45.4 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
35.	R.10021	Hara-Parvati 45.5 cm. × 28.2 cm. Kalighat *pata* 19th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
36.	R.10050	Radha and Krishna (or Shiva and Durga ?) 45.5 cm. × 27.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
37.	R.10023	Mahishasuramardini 45.5 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
38.	R.10029	Radha and Krishna 45.4 cm. × 28.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
39.	R.10028	Saraswati 45 cm. × 27.8 cm. Kalighat *pata* 19th century	Manuscripts & Patas
40.	R.10053	Rama, Sita and an attendant 45.4 cm. × 27.8 cm. Kalighat *pata* 19th century	Manuscripts & Patas
41.	R.10040	Rama, Lakshmana, Sita and Hanumana 45.5 cm. × 27.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
42.	R.S.83	Radha and Krishna 42.5 cm. × 27.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
43.	R.S.76	Radha and Krishna 43.5 cm. × 28.2 cm. Kalighat *pata* 19th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
44.	R.10025	Uma with Ganesha 44.3 cm. × 27.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
45.	R.10033	Mahadeva and Durga 44 cm. × 27.8 cm. Kalighat *pata* 19th century	Manuscripts & Patas
46.	R.10039	Rama fighting with Lava and Kusha 44 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
47.	R.10038	Hanumana being carried away 44.3 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
48.	R.10068	Shiva with a musical instrument *(tanpura)* 46.2 cm. × 36.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
49.	R.10020	The five-faced Shiva 48 cm. × 33.2 cm. Kalighat *pata* 19th century	Manuscripts & Patas
50.	R.10046	Radha and Krishna 45 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
51.	R.10047	Radha and Krishna 45 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
52.	R.10030	Kali 46.8 cm. × 36.3 cm. Kalighat *pata* 19th century	Manuscripts & Patas
53.	R.At/83/597	Seven palm-leaves joined to form the illustration of Radha and Krishna. 23.5 cm. × 17.5 cm. Orissa 19th century	Manuscripts & Patas
54.	R.At/83/598	Eight palm-leaves joined to form the illustration of Krishna with Gopies 24.4 cm. × 30.2 cm. Orissa 19th century	Manuscripts & Patas
55.	R.At/83/577	Eight palm-leaves joined to form the illustration of Rama (?) carrying a bow 24.4 cm. × 18.7 cm. Orissa 19th century	Manuscripts & Patas
56.	R.15053	Ten folios of a Jain MS. bound in a green velvet cover. Of these four are illustrated 28.2 cm. × 11.5 cm. Western India *c.* 15th century	Manuscripts & Patas
57.	R.At/90/1121	An illustrated folio of a Jain MS 27 cm. × 11 cm. Western India *c.* 15th century	Manuscripts & Patas
58.	R.At/90/1433	A Jain MS. folio with inscriptions and illustrated with fish-motifs, circles, etc. Western India *c.* 15th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
59.	R.At/90/1444	A Jain MS. folio with inscriptions and illustrated with fish-motifs, circles, etc. Western India *c.* 15th century	Manuscripts & Patas
60.	R.At/90/1443	A Jain MS. folio with inscriptions and the illustration of a man lying on bed with four female attendants standing one each in four corners 29.5 cm. × 10.5 cm. Western India *c.* 15th century	Manuscripts & Patas
61.	R.At/90/1424	A Jain MS. folio with inscriptions and illustrations of mandalas Western India *c.* 15th century	Manuscripts & Patas
62.	R.At/90/1401	A Jain MS. folio with inscriptions and illustrations of animal motifs 25 cm. × 11 cm. Western India *c.* 15th century	Manuscripts & Patas
63.	R.At/90/1425	A Jain MS. folio with inscriptions and illustrations showing a human figure and other motifs. 25.6 cm. × 10.5 cm. Western India *c.* 15th century	Manuscripts & Patas
64.	R.At/90/1189	A Jain MS. folio showing the line drawing of a lady's figure 31.4 cm. × 23 cm. Western India *c.* 15th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
65.	R.At/90/1418	A Jain MS. folio showing drawing of human figures on one side and numerals on the other side 25.8 cm. × 8.7 cm. Western India *c.* 15th century	Manuscripts & Patas
66.	R.At/90/1432	A Jain MS. folio with inscriptions and mandala illustrations 25.7 cm. × 11 cm. Western India *c.* 15th century	Manuscripts & Patas
67.	R.At/90/1422	A Jain MS. folio with inscriptions and figures of sages 25.8 cm. × 10.5 cm. Western India *c.* 15th century	Manuscripts & Patas
68.	R.At/90/1423	A Jain MS. folio with inscriptions and mandala illustrations 26 cm. × 10.7 cm. Western India *c.* 15th century	Manuscripts & Patas
69.	R.At/90/1426	A Jain MS. folio with inscriptions and mandala illustrations 26 cm. × 10.8 cm. Western India *c.* 15th century	Manuscripts & Patas
70.	R.At/90/1427	A Jain MS. folio with inscriptions and illustrations 25.5 cm. × 10 cm. Western India *c.* 15th century	Manuscripts & Patas
71.	R.At/90/1419	A Jain MS. folio with inscriptions and illustrations 24.2 cm. × 10.7 cm. Western India *c.* 15th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
72.	R.At/90/1441	A Jain MS. folio with illustrations of human figures and animals on both sides 25.6 cm. × 10.5 cm. Western India *c.* 15th century	Manuscripts & Patas
73.	R.At/90/1436	A Jain MS. folio with illustrations of human figures on one side and inscriptions and numerals on the other side 25.3 cm. × 11 cm. Western India *c.* 15th century	Manuscripts & Patas
74.	R.At/90/1434	A Jain MS. folio with floral designs on one side and figures of sages and inscriptions on the other side 25.5 cm. × 11.2 cm. Western India *c.* 15th century	Manuscripts & Patas
75.	R.At/90/1446	A Jain MS. folio with inscriptions and figures of seated sages 26 cm. × 11 cm. Western India *c.* 15th century	Manuscripts & Patas
76.	R.At/90/1429	A Jain MS. folio with figures of divines, some on chariots, on one side and inscriptions on the other side 25.7 cm. × 10.3 cm. Western India *c.* 15th century	Manuscripts & Patas
77.	R.At/90/1428	A Jain MS. folio with illustrations of a house on one side and inscriptions on the other side 26 cm. × 10.3 cm. Western India *c.* 15th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
78.	R.At/90/1417	A Jain MS. folio with inscriptions and illustrations of seated sages 25.8 cm. × 10.5 cm. Western India *c.* 15th century	Manuscripts & Patas
79.	R.At/90/1122(B)	A Jain MS. folio with inscriptions and a mandala illustrations 24.8 cm. × 11.4 cm. Western India *c.* 15th century (For related entry see the Rajasthani list)	Manuscripts & Patas
80.	R.At/90/1120	A Jain MS. folio showing illustrations of sages, disciples and a lion and inscriptions on the reverse 11 cm. × 8.3 cm. Western India *c.* 15th century	Manuscripts & Patas
81.	R.At/90/1421	A Jain MS. folio with inscriptions and illustrations of a prince with men and women before him and royal insignia at the bottom 25.5 cm. × 10.6 cm. Western India *c.* 15th century	Manuscripts & Patas
82.	R.At/90/1447	A Jain MS. folio with inscriptions and flower-motifs 25.7 cm. × 11.2 cm. Western India *c.* 15th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
83.	R.At/90/1122(C)	A Jain MS. folio with inscriptions and illustrations of female devotees including a goat-headed one before a sage 24.8 cm. × 11.1 cm. Western India *c.* 15th century (For related entry see the Rajasthani list)	Manuscripts & Patas
84.	R.At/90/1448	A Jain MS. folio with inscriptions and an illustration of a four-armed deity with female devotees 26 cm. × 11 cm. Western India *c.* 15th century	Manuscripts & Patas
85.	R.At/90/1442	A Jain MS. folio with inscriptions and symbolic representations 26 cm. × 11 cm. Western India *c.* 15th century	Manuscripts & Patas
86.	R.At/90/1431	A Jain MS. folio with inscriptions and illustrations of mandalas 25.5 cm. × 11.2 cm. Western India *c.* 15th century	Manuscripts & Patas
87.	R.At/90/1437	A Jain MS. folio with inscriptions and illustrations of men on trees 25 cm. × 11.2 cm. Western India *c.* 15th century	Manuscripts & Patas
88.	R.At/90/1361	Lobsters 45.2 cm. × 28 cm. Kalighat *pata* Early 20th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
89.	R.At/90/1359	Hanumana showing Rama and Sita in his breast 48 cm. × 33.3 cm. Kalighat *pata* Early 20th century	Manuscripts & Patas
90.	R.At/90/1360	Shiva and Bull 45.5 cm. × 28.2 cm. Kalighat *pata* 19th century	Manuscripts & Patas
91.	R.At/90/1362	Krishna playing flute 40.5 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
92.	R.At/90/1363	A fish and a lobster 45.5 cm. × 28 cm. Kalighat *pata* Early 20th century	Manuscripts & Patas
93.	R.At/73/150	Birth to death scenes Scroll-*pata* 41 cm. × 2 m. 28.5 cm. Bengal 19-20th century	Manuscripts & Patas
94.	R.At/73/149	Mythological scenes with turbaned figures Scroll-*pata* 37 cm. × 3 m. 80 cm. Bengal 19-20th century	Manuscripts & Patas
95.	R.At/81/333	Radha Krishna theme Scroll-*pata* 38.2 cm. × 1 m. 88 cm. Bengal 20th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
96.	R.At/81/332	The Ramayana Scroll-*pata* 43 cm. × 2 m. 68 cm. Bengal 19-20th century	Manuscripts & Patas
97.	R.At/81/334	The Ramayana Scroll-*pata* 39 cm. × 2 m. 73 cm. Bengal 19-20th century	Manuscripts & Patas
98.	R.At/81/335	The Ramayana Scroll-*pata* 21.2 cm. × 2 m. 66 cm. Bengal 19-20th century	Manuscripts & Patas
99.	R.10020/22	Five-headed Shiva 50.5 cm. × 27.3 cm. Kalighat *pata* 19th century	Manuscripts & Patas
100.	R.10017/23	Shiva 50.5 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
101.	R.10026	Ganesha 45 cm. × 27.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas
102.	R.10027	Kartikeya 45.5 cm. × 27.8 cm. Kalighat *pata* 19th century	Manuscripts & Patas
103.	R.10043	Krishna milking cow 46.6 cm. × 27.5 cm. Kalighat *pata* 19th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
104.	R.10042	Child Krishna 44.9 cm. × 28 cm. Kalighat *pata* 19th century	Manuscripts & Patas
105.	R.10035/19	Hanumana showing Rama and Sita inside his breast 45 cm. × 27 cm. Kalighat *pata* Early 20th century	Manuscripts & Patas
106.	S.96 (A)	Mythological scenes. The Ramayana and Krishnalila etc. (line-drawing) Scroll-*pata* 13 m. 8 cm. × 15.5 cm. Bengal 19-20th century	Manuscripts & Patas
107.	S.96 (B)	Mythological scenes. The Ramayana and Krishnalila etc. (line-drawing) Scroll-*pata* 16 m. 42 cm. × 15.5 cm. Bengal 19-20th century	Manuscripts & Patas
108.	S.96 (C)	Mythological scenes. The Ramayana and Krishnalila etc. (line-drawing) Scroll-*pata* 12 m. × 15.5 cm. Bengal 19-20th century	Manuscripts & Patas
109.	S.96 (D)	Mythological scenes. The Ramayana and Krishnalila etc. (line-drawing) Scroll-*pata* 5 m. 73 cm. × 15.5 cm. Bengal 19-20th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
110.	S.96 (E)	Mythological scenes. The Ramayana and Krishnalila etc. (line-drawing) Scroll-*pata* 2 m. 67 cm. × 15.5 cm. Bengal 19-20th century	Manuscripts & Patas
111.	R.S.96 (F)	Mythological scenes. The Ramayana and Krishnalila etc. (line-drawing) Scroll-*pata* 40 cm. × 15.5 cm. Bengal 19-20th century	Manuscripts & Patas
112.	S.96 (G)	Mythological scenes. The Ramayana and Krishnalila etc. (line-drawing) Scroll-*pata* 20 cm. × 15.5 cm. Bengal 19-20th century	Manuscripts & Patas
113.	S.96 (H)	Mythological scenes. The Ramayana and Krishnalila etc. (line-drawing) Scroll-*pata* 2 m. 16 cm. × 15.5 cm. Bengal 19-20th century	Manuscripts & Patas
114.	S.96 (I)	Mythological scenes. The Ramayana and Krishnalila etc. (line-drawing) Scroll-*pata* 4 m. 19 cm. × 15.5 cm. Bengal 19-20th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
115.	S.96 (J)	Mythological scenes. The Ramayana and Krishnalila etc. (line-drawing) Scroll-*pata* 78 cm. × 15.5 cm. Bengal 19-20th century	Manuscripts & Patas
116.	S.96 (K)	Mythological scenes. The Ramayana and Krishnalila etc. (line-drawing) Scroll-*pata* 34.5 cm. × 15 cm. Bengal 19-20th century	Manuscripts & Patas
117.	At/68/30	*Ashtasahasrikaprajnaparamita* 48.5 cm. × 61 cm. Nepal. Display 17th century	Manuscripts & Patas
118.	R.121	Pancharaksha Nepal. Display 1698 A.D.	Manuscripts & Patas
119.	R.M-12	Illustrated Geeta. Display 19th century	Manuscripts & Patas
120.	R.M-67	*Karandavyuha* Nepal. Display 1778 A.D.	Manuscripts & Patas
121.	R.At/68/29	Two illustrated leaves from Pancharaksha 48.5 cm. × 6.1 cm. Nepal. Display 12th century	Manuscripts & Patas
122.	R.14022	*Adipurana*. Display 28.3 cm. × 9.2 cm. Western India 15th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
123.	R.15201	Kalpasutra. Display 26.2 cm. × 11.4 cm. Western India 15th century	Manuscripts & Patas
124.	R.15052	Leaf from *Dasavaikalika*. Display Western India 19th century	Manuscripts & Patas
125.	R.At/89/1049	Scroll-painting related to Tantra. Display 19th century	Manuscripts & Patas
126.	R.10032	Ganga. Display Kalighat *pata* Early 20th century	Manuscripts & Patas
127.	R.10054	Gaur Netai. Display Kalighat *pata* Early 20th century	Manuscripts & Patas
128.	R.15032	*Chakshudan pata* Santhal *pata*. Display Early 20th century	Manuscripts & Patas
129.	R.10048	Sadabhuja Chaitanya Kalighat *pata*. Display Early 20th century	Manuscripts & Patas
130.	R.10051	Mahakali. Display Kalighat *pata* Early 20th century	Manuscripts & Patas
131.	R.At/90/1090	Left register : a multi-armed goddess fighting. Right register : a multi-armed god and a goddess 20.2 cm. × 14 cm. Western India 15th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
132.	R.15054	A palm-leaf MS. folio with Newari inscriptions on both sides and the illustrations of a deity and a monk (damaged) 54.3 cm. × 5.7 cm. Nepal 12th century A.D.	Manuscripts & Patas
133.	R.At/71/39	Wooden *pata*. A scene of religious discourse. Display Bengal Medieval (?)	Manuscripts & Patas
134.	R.—	(a) Scenes showing the beheading of man 70.5 cm. × 44 cm. (b) Scenes showing a four-armed Vishnu 67.5 cm. × 45 cm. (c) Scenes showing a blue god 92 cm. × 43 cm. Perhaps the scenes depict the mythology of Data Karna Bengal Early 20th century	Manuscripts & Patas
135.	R.At/90/1358	A fish 45.5 cm. × 27.2 cm. Kalighat *pata* Early 20th century	Manuscripts & Patas
136.	R.At/90/1364	Pencil-sketch of a wife falling at her husband's feet 48 cm. × 32.5 cm. Kalighat *pata* Early 20th century	Manuscripts & Patas
137.	R.At/90/1357	Ink-sketch of Bala Gopala 48 cm. × 30.2 cm. Kalighat *pata* Early 20th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
138.	R.At/90/1171	A scroll with Quranic verse 78 cm. × 4.7 cm. *c.* Late 19th century	Manuscripts & Patas
139.	R.At/90/1445	Gujarati MS folio with inscriptions in Devnagari. Figures of eight saints illustrated 25.2 cm. × 11 cm. Western India *c.* 16th century	Manuscripts & Patas
140.	R.At/90/1229	*Shahrul Biyan* by Mir Hasan—Urdu MS book containing 84 pages and four illustrations (Provincial style) *c.* 19th century	Manuscripts & Patas
141.	R.At/72/101	A buddhist palm-leaf MS showing a six-armed white deity with asword. (Manjusri ?) 31 cm. × 6 cm. Eastren India *c.* 12th century	Manuscripts & Patas
142.	R.At/68/29	Buddhist palm-leaf. A dark Buddha in *Bhumisparsha* mudra with two devotees 46 cm. × 6 cm. Eastren India *c.* 12th century	Manuscripts & Patas
143.	R.At/90/1097	Jain MS folio from Mahavira (?) being attended by female devotees Borders show a female on each side 26.3 cm. × 13.3 cm. Western India *c.* 15th century	Manuscripts & Patas

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Sl. No.	Acc No.	Description and size	School
1.	R.At/86/713	A woman with a basket. On mica 7 cm. × 10 cm. 19th century	Company
2.	R.At/86/731	A Woman with a child. On mica 10.5 cm. × 8 cm. 19th century	Company
3.	R.At/86/728	A servitor. On mica 10.5 cm. × 6.8 cm. 19th century	Company
4.	R.At/86/732	A grocer-woman. On mica 11.2 cm. × 7.7 cm. 19th century	Company
5.	R.At/86/711	A soldier. On mica 11.5 cm. × 6 cm. 19th century	Company
6.	R.At/86/710	A flute-player. On mica 10.5 cm. × 7.5 cm. 19th century	Company
7.	R.At/86/716	A maid. On mica 10.5 cm. × 8.5 cm. 19th century	Company
8.	R.At/86/717	A girl with a basket on her head. On mica 10.5 cm. × 8.4 cm. 19th century	Company
9.	R.At/86/726	A peon carrying a staff. On mica 10.5 cm. × 7.7 cm. 19th century	Company
10.	R.At/86/722	A musician with a saxophone. On mica 9.6 cm. × 7 cm. 19th century	Company
11.	R.At/86/727	A cloth-merchant. On mica 10.4 cm. × 7.2 cm. 19th century	Company
12.	R.At/86/725	A man carrying cereals. On mica 12 cm. × 8 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
13.	R.At/86/721	A scribe. On mica 9.5 cm. × 6.6 cm. 19th century	Company
14.	R.At/86/720	A liveried peon. On mica 7 cm. × 10.2 cm. 19th century	Company
15.	R.At/86/712	A hookah-bardar. On mica 7.5 cm. × 8 cm. 19th century	Company
16.	R.At/86/714	A man carrying earthen pots. On mica 10 cm × 6.7 cm. 19th century	Company
17.	R.At/86/730	A florist. (In colour) On mica 9.7 cm. × 7.3 cm. 19th century	Company
18.	R.At/86/724	A horse. On mica 10.7 cm. × 7.7 cm. 19th century	Company
19.	R.At/86/715	A liveried peon. On mica 6.5 cm. × 10 cm. 19th century	Company
20.	R.At/86/719	A man with a lamp. On mica 8.5 cm. × 12 cm. 19th century	Company
21.	R.At/86/723	A man with a fly-whisk. On mica 10 cm. × 7 cm. 19th century	Company
22.	R.At/86/718	A violinist. On mica 10.8 cm. × 8.4 cm. 19th century	Company
23.	R.At/86/729	A sepoy. On mica 7 cm. × 10 cm. 19th century	Company
24.	R.13146/S.660	Bust portrait of a youth 7.3 cm. × 5 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
25.	R.14288/S.545	A memsahib with her child (Done in the Punjab hills) 24.2 cm. × 19.8 cm. 19th century	Company
26.	R.14313/S.542	An English man with his wife and two children 29.2 cm. × 24.5 cm. 19th century	Company
27.	R.B.-12	Bust of a lady. Persian inscription at the back 33.7 cm. × 21.5 cm. 19th century	Company
28.	R.424 A.G./S.53	A falcon 55.2 cm. × 37.8 cm. 19th century	Company
29.	R.13171/S.93	King on an elephant and the portrait of a bull (damaged) 72 cm. × 49 cm. 19th century	Company
30.	R.13172/S.92	Maharaja Ranjit Singh in conference (damaged) 19th century	Company
31.	R.14939/S.915	Ink-portrait of a begum 35.3 cm. × 28 cm. 19th century	Company
32.	R.—	Bust portrait of a lady smoking hookah On ivory 10.8 cm. × 8.4 cm. 19th century	Company
33.	S.136	A bird perched on a branch 19th century	Company
34.	R.At/90/1456	A yogi. On mica 13.7 cm. × 9.2 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
35.	R.At/90/1473	A man carrying a bundle of leaves on his head. On mica 10.3 cm. × 7.3 cm. 19th century	Company
36.	R.At/90/1469	A duck. On mica 12.5 cm. × 8.6 cm. 19th century	Company
37.	R.At/1463	A seated yogi before a fire. On mica 13.8 cm. × 10 cm. 19th century	Company
38.	R.At/90/1453	A peon with a bunch of keys. On mica 14.4 cm. × 10.3 cm. 19th century	Company
39.	R.At/90/1457	A palanquin with four bearers. On mica 14.2 cm 10.2 cm. 19th century	Company
40.	R.At/90/1460	A florist. On mica 14.2 cm × 10.2 cm. 19th century	Company
41.	R.At/90/1470	A cobbler. On mica 10.2 cm. × 7.5 cm. 19th century	Company
42.	R.At/90/1452	A washerman ironing. On mica 14.3 cm. × 10.5 cm. 19th century	Company
43.	R.At/90/1458	Krishna. On mica 12 cm. × 8.2 cm. 19th century	Company
44.	R.At/90/1449	A seated yogi with an *ektara* 13.6 cm. × 9.8 cm. 19th century	Company
45.	R.At/90/1464	Elephant with riders and two footmen On mica 14.8 cm. × 10.7 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
46.	R.At/90/1451	A *khansama* with a lidded vase. On mica 14.5 cm. × 10.5 cm. 19th century	Company
47.	R.At/90/1462	A peon. (Unfinished.) On mica 14.5 cm. × 10.5 cm. 19th century	Company
48.	R.At/90/1467	Two palanquin bearers. On mica 15 cm. × 11 cm. 19th century	Company
49.	R.At/90/1459	A sweeper. On mica 19th century	Company
50.	R.At/90/1466	A liveried peon. On mica 14.2 cm. × 10.3 cm. 19th century	Company
51.	R.At/90/1472	A tailor. On mica 10.3 cm. × 7.5 cm. 19th century	Company
52.	R.At/90/1455	A water-carrier. On mica 14.5 cm. × 10.5 cm. 19th century	Company
53.	R.At/90/1468	A musician.On mica 14.7 cm. × 10.3 cm. 19th century	Company
54.	R.At/90/1450	A cobbler.. On mica 14.5 cm. × 10.3 cm. 19th century	Company
55.	R.At/90/1465	Two palanquin bearers. On mica 14.3 cm. × 10.5 cm. 19th century	Company
56.	R.At/90/1461	A yogi. On mica 13.9 cm. × 9.7 cm. 19th century	Company
57.	R.At/90/1471	A *peshkar*. On mica 10.5 cm. × 7.5 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
58.	R.At/90/1454	A tailor. On mica 10.5 cm. × 14.5 cm. 19th century	Company
59.	R.13186/S.820	Yogies. (Totally damaged) 19th century	Company
60.	R.13204/S.861	Flowers 37.5 cm. × 24.8 cm. 19th century	Company
61.	R.516/S.857	A nautch scene. Pencil sketch 26.8 cm. × 13.8 cm. 19th century	Company
62.	R.13155/S.865	Flowers 25.6 cm. × 21.9 cm. 19th century	Company
63.	R.431/S.848	Two men with birds and cages 30 cm. × 18.7 cm. 19th century	Company
64.	R.237/S.862	Flowers. Ink-sketch 27.7 cm. × 12.6 cm. 19th century	Company
65.	R.13154/S.866	Floral designs in four separate registers 26.8 cm. × 22.8 cm. 19th century	Company
66.	14912/S.902	Floral sketch. Ink-drawing 21.7 cm. × 15.3 cm. 19th century	Company
67.	R.13223/S.827	A cobbler. Ink-sketch 14 cm. × 11.8 cm. 19th century	Company
68.	R.13156/S.864	Floral sketches 28 cm. × 23.5 cm. 19th century	Company
69.	R.13204/S.861	Flowers (line-drawing) 37.4 cm. × 24.6 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
70.	R.13186/S.820	A half-naked lady lying with a bird. Behind her a man and a child (line-drawing, badly damaged) 19th century	Company
71.	R.459/S.752	A black plumed heron (badly damaged) 30.5 cm. × 25.4 cm. 19th century	Company
72.	R.473/S.753	A heron 48.5 cm. × 38.3 cm. 19th century	Company
73.	R.436 A.G./S.744	A green bird 19th century	Company
74.	R.13238/S.727	A donkey 23.7 cm. × 18.8 cm. 19th century	Company
75.	R.14076/S.737	Cuckoo. 21 cm. × 13.5 cm. 19th century	Company
76.	R.14882/S.872	Sanyasis and faquirs. (Partially coloured) 33.5 cm. × 21.5 cm. 19th century	Company
77.	R.14887/S.877	Face of a mythical animal 20.5 cm. × 9.3 cm. 19th century	Company
78.	R.341/S.735	Animal and human grotesque (line-drawing) 21.8 cm. × 15.2 cm. 19th century	Company
79.	R.13237/S.731	A buffalo with calf 26.5 cm. × 19.4 cm. 19th century	Company
80.	R.461A.G./S.743	A sparrow 18 cm. × 15.4 cm. 19th century	Company
81.	R.14904/S.894	A cheetah attacking a deer 14 cm. × 10.5 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
82.	R.437/S.734	Animal-grotesque. (Ink-sketch) 17 cm. × 16 cm. 19th century	Company
83.	R.14903/S.893	Four ewe. 15 cm. × 10.5 cm. 19th century	Company
84.	R.14891/S.881	A hawk. (Ink-sketch, damaged) 12.5 cm. × 11.3 cm. 19th century	Company
85.	R.438/S.723	A dog (line-drawing) 16.5 cm. × 15.2 cm. 19th century	Company
86.	R.435 A.G/S.740	A bird 12.2 cm. × 9.5 cm. 19th century	Company
87.	R.445/S.747	A hawk 9.5 cm. × 6.5 cm. 19th century	Company
88.	R.14226/S.715	(a) A sailing ship (b) Four deer (c) A deer and a calf 30.4 cm. × 18 cm. 19th century	Company
89.	R.565 A.G./S.739	A bird 19 cm. × 15.8 cm. 19th century	Company
90.	R.568/S.707	Half-done figure of a European 18.2 cm. × 11.2 cm. 19th century	Company
91.	R.13243/S.751	A bird 36 cm. × 26.8 cm. 19th century	Company
92.	R.14897/S.887	A lion and an alligator 31.5 cm. × 22 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
93.	R.462/S.718	A fish 26.2 cm. × 18 cm. 19th century	Company
94.	R.441 A.G./S.750	A bulbul on a bough 19.3 cm. × 13 cm. 19th century	Company
95.	R.574/S.748	A bird 18.5 cm. × 16 cm. 19th century	Company
96.	R.577/S.749	A bird 20.2 cm. × 21 cm. 19th century	Company
97.	R.530/S.703	Eleven portraits of Europeans 32.8 cm. × 21 cm. 19th century	Company
98.	R.448 A.G./S.741	Two birds 14.8 cm. × 11.2 cm. 19th century	Company
99.	R.458/S.721	Two deer. Reverse : a nilgai 18.6 cm. × 12.2 cm. 19th century	Company
100.	R.449 A.G./S.746	A bird of prey 19.2 cm. × 13.6 cm. 19th century	Company
101.	R.566/S.745	A bird of prey 19.7 cm. × 19.5 cm. 19th century	Company
102.	R.463/S.725	A lamb. 26.5 cm. × 20 cm. 19th century	Company
103.	R.14934/S.914	A crane 18 cm. × 13 cm. 19th century	Company
104.	R.14933/S.913	A bird 25 cm. × 13.3 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
105.	S.262	Krishna playing Holi. On ivory 16.4 cm. × 9.8 cm. 19th century	Company
106.	S.264	Protrait of a Mughal king. On ivory 6.5 cm. × 5 cm. 19th century	Company
107.	S./264	Portrait of a memsahib. On ivory 3 cm. × 3.5 cm. 19th century	Company
108.	S.264	Portrait of a Mughal king. On ivory 4.7 cm. × 3.7 cm. 19th century	Company
109.	S.264	Portrait of a memshib. On ivory 8.9 cm. × 7.3 cm. 19th century	Company
110.	R.12349	The peacock throne. On ivory 13 cm. × 9 cm. 19th century	Company
111.	R.12348	Jahangir. On ivory 7 cm. × 5.7 cm. 19th century	Company
112.	R.12350	Nurjahan, Jahangir, Shahjahan and Mumtaz. On ivory 9.2 cm. × 7 cm. 19th century	Company
113.	R.12353 (B)	The Tajmahal. On ivory 14 cm. × 11 cm. 19th century	Company
114.	R.12359	Alshtermahal. On ivory 4 cm. × 5 cm. 19th century	Company
115.	R.12355	Nurjahan. On ivory 4 cm. × 5.2 cm. 19th century	Company
116.	R.12352 (A)	Mumtajmahal. On ivory 5 cm. × 4 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
117.	R.12353	Zeenutmahal. On ivory 4 cm. × 5 cm. 19th century	Company
118.	R.12354	Jahangir. On ivory 4 cm. × 5 cm. 19th century	Company
119.	R.12356	Talibegum. On ivory 4.3 cm. × 5.67 cm. 19th century	Company
120.	R.12358	Motimahal. On ivory 5 cm. × 4 cm. 19th century	Company
121.	R.12357	Akbar. On ivory 5 cm. × 4 cm. 19th century	Company
122.	R.12361	Mumtajmahal. On ivory 4 cm. × 5.2 cm. 19th century	Company
123.	R.12360	Kutsyabegum. On ivory 3.8 cm. × 5.2 cm. 19th century	Company
124.	R.12351	Shahjahan. On ivory 4 cm. × 5.2 cm. 19th century	Company
125.	R.12362	Kashmeran. On ivory 4 cm. × 5 cm. 19th century	Company
126.	R.13413	Scene of *Chadak* festival. On mica 22 cm. × 17.8 cm. 19th century	Company
127.	S.290	Two musicians by a river 21 cm. × 16.8 cm. 19th century	Company
128.	R.373/S.275	Bust of a European lady 41.3 cm. × 28.5 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
129.	R.13212	Blacksmiths working (line-drawing) 37.5 cm. × 25 cm. 19th century	Company
130.	R.13205	Bullocks around an oil-press (line-drawing) 36.5 cm. × 22.5 cm. 19th century	Company
131.	R.13207	Embroiderers at work (line-drawing, damaged) 40.4 cm. × 26.2 cm. 19th century	Company
132.	R.13211	Men from different professions (damaged) 37.6 cm. × 24.6 cm. 19th century	Company
133.	R.13209	Men from diverse callings (damaged) 39 cm. × 25 cm. 19th century	Company
134.	R.13208	Sadhus and faquirs (line-drawing) 37.5 cm. × 24.6 cm. 19th century	Company
135.	R.13216	Two sanyasis (line-drawing) 19.2 cm. × 9 cm. 19th century	Company
136.	R.13219	A running dervish (line-drawing) 19.3 cm. × 13 cm. 19th century	Company
137.	R.13176	A flower (ink-drawing) 11.7 cm. × 8 cm. 19th century	Company
138.	R.13203	A blacksmith (line-drawing) 19.6 cm. × 15.7 cm. 19th century	Company
139.	R.13201	A weaver (line-drawing) 21 cm. × 14.5 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
140.	R.13188	A monkey-player and a goat-player performing before an appreciative audience 22.5 cm. × 18 cm. 19th century	Company
141.	R.13229	A woman and a man seated on chairs and drinking 13.2 cm. × 11 cm. 19th century	Company
142.	R.13230	A woman with pitchers 13.5 cm. × 7.5 cm. 19th century	Company
143.	R.13193	Dervishes (line-drawing) 25 cm. × 18.3 cm. 19th century	Company
144.	R.13189	Busts of different people 19th century	Company
145.	R.13199	Loom-workers 25 cm. × 17.2 cm. 19th century	Company
146.	R.517	Dhoti-clad figures (line-drawing) 26 cm. × 15.8 cm. 19th century	Company
147.	R.13222	Two munshis with papers (line-drawing, damaged) 19 cm. × 10.5 cm. 19th century	Company
148.	R.13191	Portraits of seated people (line-drawing) 24.5 cm. × 19 cm. 19th century	Company
149.	R.13233	Pencil drawn bust of a European lady 26.4 cm. × 19.5 cm. 19th century	Company
150.	R.13220	*Sadhus* (line-drawing) 19 cm. × 15.3 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
151.	R.13221	A *sadhu* and a seated woman 16.4 cm. × 14.9 cm. 19th century	Company
152.	R.498	Two sketches of seated *sadhus* 16.7 cm. × 14.3 cm. 19th century	Company
153.	R.13217	A tribal couple from the hills 12.9 cm. × 12 cm. 19th century	Company
154.	R.13218	Standing profile of a bearded man holding a cloth (line-drawing, damaged) 12 cm. × 8.3 cm. 19th century	Company
155.	R.13265	Bust profile of a youth (line-drawing) 20.2 cm. × 8.8 cm. 19th century	Company
156.	R.13224	A Sikh king on throne. (Name in Punjabi inscription) 15 cm. × 9.5 cm. 19th century	Company
157.	R.13202	A musical instrument maker at work (line-drawing) 20.7 cm. × 13.5 cm. 19th century	Company
158.	R.13032	Portrait profile of a man's head with inscription 21.3 cm. × 13.4 cm. 19th century	Company
159.	R.13192	Portraits of faquirs (line-drawing) 24.6 cm. × 18.6 cm. 19th century	Company
160.	R.13054	A tuberose stick 19.2 cm. × 9.5 cm. 19th century	Company
161.	R.14420	An elephant-grotesque 19th century Nahar Collection	Company

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Sl. No.	Acc No.	Description and size	School
162.	R.14417	Tipoo Sultan 24.5 cm. × 20.0 cm. 19th century Nahar Collection	Company
163.	R.14524	(i) A bearded Mughal king. On ivory 8.6 cm. × 6.7 cm. (ii) A tiger 6 cm. × 4.8 cm. (iii) A grey bearded Mughal king 8.5 cm. × 6.8 cm. (iv) Bust of a lady 6 cm. × 5.4 cm. (v) Bust of a king 9.3 cm. × 6.8 cm. (vi) Diwan-i-Khas 8 cm. × 6 cm. (vii) Profile of a Mughal prince 8.5 cm. × 6.5 cm. (viii) Bust of a lady 5.8 cm. × 5.4 cm. (ix) The peacock throne 14.8 cm. × 8.6 cm. 19th century Nahar Collection	Company
164.	R.14569	(i) Holi-colour preparers 13.2 cm. × 10 cm. (ii) A peon with a bunch of keys 11 cm. × 7.8 cm. (iii) An accountant 11 cm. × 8.2 cm. (iv) A metal utensil maker 11.8 cm. × 8.4 cm. 19th century Nahar collection	Company

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Sl. No.	Acc No.	Description and size	School
165.	R.14568	(i) A sweetmeat seller 16.8 cm. × 13.5 cm. (ii) A potter 16.3 cm. × 11.8 cm. (iii) A boat 17.5 cm. × 13.4 cm. (iv) A washerman 17 cm. × 11.2 cm. (v) A carrier 16.8 cm. × 11.3 cm. 19th century Nahar collection	Company
166.	R.14415	A rakshasa and an animal On deer skin (damaged) 32.2 cm. × 22.5 cm. Nahar collection	Company
167.	R.14499	Profile of an English official 20.1 cm. × 13.6 cm. 19th century Nahar collection	Company
168.	R.14568	A money-broker. On mica 14.3 cm. × 11.3 cm. 19th century Nahar collection	Company
169.	R.266	Mother and child. Display 19th century	Company
170.	R.13436	A group of musicians. Display 19th century	Company
171.	R.At/73/159	A nautch party. On mica. Display 19th century	Company
172.	R.At/90/1117	Sketch of sculptures on an architectural piece—a fairy coming out form a fish, another fairy with a fly-whisk behind a lion-faced tiger, and at the rear an elephant-faced winged tiger 24.9 cm. × 15.2 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
173.	R.At/90/1118	Similar structure as above with two cupolas and a lion-faced tiger in the middle, a crocodile in front and a deer behind 24.2 cm. × 17 cm. 19th century	Company
174.	R.At/90/1116	Illustration of different types of sticks 30 cm. × 80.5 cm. 19th century	Company
175.	R.At/71/51	Portrait of a lady 25.4 cm. × 20 cm. 19th century	Company
176.	R.At/71/63	Rama and Sita on throne. Mythological scenes and people seated on Victorian charis at the bottom 55 cm. × 35.5 cm. 19th century	Company
177.	R.At/71/53	Benugopala on canvas 33.5 cm. × 28 cm. 19th century	Company
178.	R.15057	An hawk 8.5 cm. × 5 cm. 19th century	Company
179.	R.15058	A sahib and a mem on a ship with flaunting sails (damaged) 30.2 cm. × 22 cm. 19th century	Company
180.	R.14421	An horse-grotesque. Display Nahar collection 19th century	Company
181.	R.14525	An English man. On ivory 15.8 cm. × 13 cm. 19th century	Company
182.	R.14565	An English lady. On ivory 6.5 cm. × 7 cm. 19th century	Company

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Sl. No.	Acc No.	Description and size	School
183.	R.14563	A Mughal king. On ivory 7 cm. × 8 cm. 19th century	Company
184.	R.14564	Bust of a woman. On ivory 2.5 cm. × 2.5 cm. 19th century	Company
185.	R.14428	A grotesque on deer skin 31.4 cm. × 23.2 cm. 19th century	Company
186.	R.14418	Portrait of a king 25 cm. × 20 cm. 19th century	Company
187.	R.14423	A dhoti-clad man reading 28.5 cm. × 21.2 cm. 19th century	Company
188.	475/754	A peacock 49.5 cm. × 34.5 cm. 19th century	Company
189.	R.At/90/1230	Red fort. On ivory 6 cm. × 4.8 cm. 19th century	Company
190.	532/704	Small portraits of European men and women—twenty-seven in number fixed on a sheet of paper. Men are shown with pig-tails The largest size drawing is 5 cm. × 3.5 cm. Late 18th century	Company

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Sl. No.	Acc No.	Description and size	School
1.	R.At/73/177	'Dadamoshai' by A. N. Tagore 13 cm. × 10 cm. 20th century	Modern, Bengal
2.	R.At/89/1059	Siva with Kali and bull 34.7 cm. × 26 cm. 19th century	Modern, Orissa
3.	R.At/80/59	A man preparing *chillum* by Jamini Ray 31.5 cm. × 23.5 cm. 20th century	Modern, Bengal
4.	R.At/71/82	Money-lender by G. N. Tagore 36 cm. × 26.7 cm. 20th century	Modern, Bengal
5.	R.At/73/193	A lady's profile by Sunayani Devi 35 cm. × 25.9 cm. 20th century	Modern, Bengal
6.	R.At/72/32	People in silhouette 7.5 cm. × 19.5 cm. 20th century	Modern
7.	R.15000	A night scene 22 cm. × 18.2 cm. 20th century	Modern
8.	R.At/7186	Fire-play 32.6 cm. × 2.5 cm. 20th century	Modern
9.	R.At/80/258	Ploughing by Jamini Ray 40 cm. × 28 cm. (damaged) 20th century	Modern, Bengal
10.	R.At/81/319	Blindman and son by A. N. Tagore (?) 20.5 cm. × 20.2 cm. 20th century	Modern, Bengal
11.	R.At/71/74	Dream of Taj by A. N. Tagore 27.5 cm. × 14.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
12.	R.At/73/181	"Buro Angla" by A. N. Tagore 18.5 cm. × 25 cm. 20th century	Modern, Bengal
13.	R.525/S.302	Man and women drinking by A. N. Tagore 26.3 cm. × 17.2 cm. 20th century	Modern, Bengal
14.	R.At/73/182	A dog by A. N. Tagore 20.5 cm. × 19 cm. 20th century	Modern, Bengal
15.	R.At/72/125	Two Vaishnava saints by Asit K. Haldar 18.5 cm. × 24.5 cm. 20th century	Modern, Bengal
16.	R.At/81/307	Two deer by Nandalal Bose 28 cm. × 22.4 cm. 20th century	Modern, Bengal
17.	R.At/81/304	Koel by Nandalal Bose 23 cm. × 27.5 cm. 20th century	Modern, Bengal
18.	R.At/81/305	Koel by Nandalal Bose 23 cm. × 27.5 cm. 20th century	Modern, Bengal
19.	R.At/81/309	A hedge-hog by Nandalal Bose 24.5 cm. × 16.5 cm. 20th century	Modern, Bengal
20.	R.At/86/685	A lady with veena (line-drawing) by A. N. Tagore 20th century	Modern, Bengal
21.	R.At/81/38	A pair of ducks by A. N. Tagore 20 cm. × 8.2 cm. 20th century	Modern, Bengal
22.	R.At/81/682	A girl with an offering by A. N. Tagore (line-drawing) 17.5 cm. × 12.7 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
23.	R.At/89/1027	Sita and Valmiki with Lava and Kusha by Krishna Lal Das 45.5 cm. × 33.5 cm. 20th century	Modern, Bengal
24.	R.At/89/1033	Lava and Kusha singing in Rama's court by Krishna Lal Das 50.2 cm. × 37.3 cm. 20th century	Modern, Bengal
25.	R.At/88/826	Ganesha by Jamini Ray 49.2 cm. × 29.5 cm. 20th century	Modern, Bengal
26.	R.At/88/823	Bust of a man by Jamini Ray 53 cm. × 35 cm. 20th century	Modern, Bengal
27.	R.At/88/818	A goose by Jamini Ray 48.8 cm. × 33.8 cm. 20th century	Modern, Bengal
28.	R.At/88/827	Krishna playing flute by Jamini Ray 45.8 cm. × 31 cm. 20th century	Modern, Bengal
29.	R.At/88/824	Elephant with riders by Jamini Ray 56 cm. × 40.5 cm. 20th century	Modern, Bengal
30.	R.At/88/821	A woman by Jamini Ray 44.5 cm. × 27.2 cm. 20th century	Modern, Bengal
31.	R.At/86/708	A villager with two kids 9.2 cm. × 15.4 cm. 20th century	Modern, Bengal
32.	R.At/86/681	A hill-cottage by A. N. Tagore 17.5 cm. × 8.5 cm. 20th century	Modern, Bengal
33.	R.At/88/814	A lady with a pitcher by Jamini Ray 41 cm. × 25.6 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
34.	R.At/66/17	Hilsa fishing by Mukul Dey 31 cm. × 21.2 cm. 20th century	Modern, Bengal
35.	R.At/81/311	A jackal and a crab by Nandalal Bose 28 cm. × 23 cm. 20th century	Modern, Bengal
36.	R.At/89/1052	A baul singer by Hrishikesh Deb Burman 18.5 cm. × 27 cm. 20th century	Modern, Bengal
37.	R.At/89/1050	A lady holding a floral decoration by Sunayani Debi 32 cm. × 36.8 cm. 20th century	Modern, Bengal
38.	R.At/80/260	Sowing by Jamini Ray 38 cm. × 25 cm. 20th century	Modern, Bengal
39.	R.At/80/261	Bullock cart 31.2 cm. × 23 cm. 20th century	Modern, Bengal
40.	R.At/9/1056	Banyan tree (ink-drawing) by Jamini Ray 27.2 cm. × 36 cm. 20th century	Modern, Bengal
41.	R.At/88/820	Sita, Jatayu and Ravana by Jamini Ray 61 cm. × 35.2 cm. 20th century	Modern, Bengal
42.	R.At/72/126	Krishna and Gopies by Asit Haldar (?) 29.4 cm. × 23 cm. 20th century	Modern, Bengal
43.	R.At/73/176	A mountain scenery painted on a postcard by A. N. Tagore 20th century	Modern, Bengal
44.	R.At/88/822	Two women by Jamini Ray 38 cm. × 27 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
45.	R.At/81/310	A mongoose fighting with a snake by Nanadalal Bose 16.3 cm. × 24.3 cm. 20th century	Modern, Bengal
46.	R.At/80/1029	Lava and Kusha arresting the sacrificial horse, from the Ramayana by Krishna Lal Das 38 cm. × 28 cm. 20th century	Modern, Bengal
47.	R.At/89/1054	Women by Hrishikesh Deb Burman 41 cm. × 27 cm. 20th century	Modern, Bengal
48.	R.At/87/803	A seated lady by Jamini Ray 33.2 cm. × 22.7 cm. 20th century	Modern, Bengal
49.	R.At/88/815	Two women by Jamini Ray 43.6 cm. × 21 cm. 20th century	Modern, Bengal
50.	R.At/88/825	Rama, Lakshmana and Sita with Marichi as golden deer by Jamini Ray 57.5 cm. × 37.5 cm. 20th century	Modern, Bengal
51.	R.At/89/1057	An old nobleman inside and a maid with surahi outside a palace by Hrishikesh Deb Burman 37 cm. × 23.4 cm. 20th century	Modern, Bengal
52.	R.At/89/1055	Uma practising meditation under water by Hrishikesh Deb Burman 25 cm. × 18 cm. 20th century	Modern, Bengal
53.	R.At/89/1058	A pair of Santhal women by Hrishikesh Deb Burman 32.4 cm. × 23.6 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
54.	R.At/88/828	A dhoti clad figure by Jamini Ray 41.7 cm. × 21.7 cm. 20th century	Modern, Bengal
55.	R.At/88/817	A figure executed on cane by Jamini Ray 47 cm. × 24 cm. 20th century	Modern, Bengal
56.	R.At/87/806	Colour composition by Jamini Ray 46.6 cm. × 41 cm. 20th century	Modern, Bengal
57.	R.At/87/804	Obverse : cow. Reverse : two figures by Jamini Ray 38.6 cm. × 30.6 cm. 20th century	Modern, Bengal
58.	R.At/87/808 (A)	Mother and child by Jamini Ray 15 cm. × 9.5 cm. 20th century	Modern, Bengal
59.	R.At/87/808 (B)	Animals and ladies in two panels by Jamini Ray 17.6 cm. × 13.5 cm. 20th century	Modern, Bengal
60.	R.At/87/808 (C)	Mother and child by Jamini Ray 14.9 cm. × 10.3 cm. 20th century	Modern, Bengal
61.	R.At/87/808 (D)	Horse by Jamini Ray 12.3 cm. × 12.8 cm. 20th century	Modern, Bengal
62.	R.At/87/808 (E)	Ink-sketches by Jamini Ray 16.5 cm. × 13.2 cm. 20th century	Modern, Bengal
63.	R.At/87/808 (F)	Two busts by Jamini Ray 11.8 cm. × 14.5 cm. 20th century	Modern, Bengal
64.	R.At/87/808 (G)	A figure by Jamini Ray 17 cm. × 11 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
65.	R.At/87/808 (H)	An ink-sketch by Jamini Ray 19 cm. × 13.7 cm. 20th century	Modern, Bengal
66.	R.At/87/808 (I)	An ink-sketch by Jamini Ray 14 cm. × 12 cm. 20th century	Modern, Bengal
67.	R.At/87/801	Obverse : three ladies in a row by Jamini Ray Reverse : incomplete painting by Jamini Ray 49 cm. × 37.5 cm. 20th century	Modern, Bengal
68.	R.At/87/805	A European lady by Jamini Ray 40 cm. × 25 cm. 20th century	Modern, Bengal
69.	R.At/81/300	Santa Clause by A. N. Tagore 33.5 cm. × 21.5 cm. 20th century	Modern, Bengal
70.	R.At/87/807	Doll designs by Jamini Ray 77.7 cm. × 40.9 cm. 20th century	Modern, Bengal
71.	R.At/85/644	Babus playing card (oils) by Bamapada Banerjee 51 cm. × 40 cm. 20th century	Modern, Bengal
72.	R.At/81/298	A figure by A. N. Tagore 21 cm. × 15 cm. 20th century	Modern, Bengal
73.	R.At/84/617	Bird by A. N. Tagore 14 cm. × 9.5 cm. 20th century	Modern, Bengal
74.	R.At/85/637	Radha and Krishna, an embroidered work 32.5 cm. × 25 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
75.	R.At/81/297	Profile of a man in pencil by A. N. Tagore 11 cm. × 15 cm. 20th century	Modern, Bengal
76.	R.At/81/301	A figure by A. N. Tagore 19 cm. × 8 cm. 20th century	Modern, Bengal
77.	R.At/81/302	An old man by A. N. Tagore 14 cm. × 20 cm. 20th century	Modern, Bengal
78.	R.At/81/295	Pen-sketch of a man and a woman by A. N. Tagore 26 cm. × 21.2 cm. 20th century	Modern, Bengal
79.	R.At/79/235	A lady on a terrace by Asit Kumar Haldar 32 cm. × 19.5 cm 20th century	Modern, Bengal
80.	R.At/81/296	A pencil profile by A. N. Tagore 14.5 cm. × 12 cm. 20th century	Modern, Bengal
81.	R.At/81/299	Profile of a bearded man by A. N. Tagore 25 cm. × 17 cm. 20th century	Modern, Bengal
82.	R.At/80/81	Railway station (oils) 62 cm. × 46.5 cm. 20th century	Modern, Bengal
83.	R.At/81/292	Banyan tree (oils) 60 cm. × 46 cm. 20th century	Modern, Bengal
84.	R.At/99/1216	A woman paying obeisance by Nandalal Bose 23 cm. × 24.9 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
85.	R.At/90/1214	A woman standing on a terrace (in Rajasthani style) by Gopal Ghosh 30.5 cm. × 18.5 cm. 20th century	Modern, Bengal
86.	R.At/90/1201	A goatherd playing flute 39.5 cm. × 33 cm. 20th century	Modern, Bengal
87.	S.3282	Lobster (oils) 38.5 cm. × 34 cm. 19th century	Modern
88.	No number	Carrots and a turnip (oils) 43.4 cm. × 34 cm. 19th century	Modern
89.	No number	An off-shore scene in Arabia with boats (oils) 30 cm. × 21 cm. 19th century	Modern
90.	R.At/90/1365	A four-armed god on a winged horse by Nandalal Bose 20th century	Modern, Bengal
91.	R.At/90/1160	A girl with a pitcher in a river by Durga Shankar Bhattacharya 39 cm. × 30.4 cm. 20th century	Modern, Bengal
92.	R.At/93/1555	Self portrait by Nandalal Bose 37 cm. × 30.5 cm. 20th century	Modern, Bengal
93.	R.At/80/262	Jagai-Madhai by Nandalal Bose 22.5 cm. × 17 cm. 20th century	Modern, Bengal
94.	R.At/73/183	Profile of a lady (in crayon) by A. N. Tagore 29 cm. × 20.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
95.	R.At/2/134	A sea-view (in crayon) 26 cm. × 19 cm. 20th century	Modern, Bengal
96.	R.At/86/687	Bhairab and a lotus by A. N. Tagore 17.8 cm. × 12.5 cm. 20th century	Modern, Bengal
97.	R.At/86/678	A *dholak*-player by A. N. Tagore 16.2 cm. × 19.9 cm.. 20th century	Modern, Bengal
98.	R.At/86/679	A dervish with a cat 20.5 cm. × 16.5 cm. 20th century	Modern
99.	R.At/81/316	Rabindranath standing under a pair of trees by A. N. Tagore 24.5 cm. × 18 cm. 20th century	Modern, Bengal
100.	R.At/81/306	A frog under a mushroom by Nandalal Bose 29.5 cm. × 34.2 cm. 20th century	Modern, Bengal
101.	R.At/81/312	A cow and a cat by Nandalal Bose 27.5 cm. × 23 cm. 20th century	Modern, Bengal
102.	R.At/84/616	A coy maid by Sunayani Debi 34.6 cm. × 25.7 cm. 20th century	Modern, Bengal
103.	R.At/85/647	A *Nulia* by Nandalal Bose 14 cm. × 8.8 cm.. 20th century	Modern, Bengal
104.	R.At/71/87	Karna praying to the Sun-God by G. N. Tagore 40.5 cm. × 29 cm. 20th century	Modern, Bengal
105.	R.At/71/84	Wonderland by G. N. Tagore 40 cm. × 23.7 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
106.	R.At/73/188	A mountain view by G. N. Tagore 29.8 cm. × 24.5 cm. 20th century	Modern, Bengal
107.	R.At/81/303	A cow by Nandalal Bose 29.8 cm. × 24.5 cm. 20th century	Modern, Bengal
108.	R.At/81/308	A crane by Nandalal Bose 27.5 cm. × 22.3 cm. 20th century	Modern, Bengal
109.	R.At/73/208	Birahini Bishnupriya by K. N. Majumdar 30 cm. × 31.5 cm. 20th century	Modern, Bengal
110.	R.At/71/69	A portrait by Rabindranath 35 cm. × 24.5 cm. 20th century	Modern, Bengal
111.	R.14488	Abdul Khalek in his curio shop by A. N. Tagore 19.5 cm. × 28.7 cm. 20th century	Modern, Bengal
112.	R.At/73/185	A bird and the moon (in crayon) by A. N. Tagore 17.2 cm. × 12.5 cm. 20th century	Modern, Bengal
113.	R.At/73/189	Profile of Rabindranath by G. N. Tagore 24.3 cm. × 16.4 cm. 20th century	Modern, Bengal
114.	R.At/72/129	Natir Puja by A. N. Tagore (in crayon) 38.2 cm. × 30.5 cm. 20th century	Modern, Bengal
115.	R.At/72/128	A dancer (in crayon) by A. N. Tagore 31.3 cm. × 38 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
116.	R.At/73/180	Ekka-gari by A. N. Tagore 17 cm. × 25 cm. 20th century	Modern, Bengal
117.	R.At/71/81	Cartoon—Academic light by G. N. Tagore 25.3 cm. × 30.5 cm. 20th century	Modern, Bengal
118.	R.At/84/619	A man reading a book by A. N. Tagore 25.5 cm. × 17.5 cm. 20th century	Modern, Bengal
119.	R.At/73/175	A flower-show by G. N. Tagore 17.5 cm. × 10.7 cm. 20th century	Modern, Bengal
120.	R.At/86/680	A lady with a lotus leaf by A. N. Tagore 26.5 cm. × 17.5 cm. 20th century	Modern, Bengal
121.	R.15017	Wonderland by G. N. Tagore 38.2 cm. × 28 cm. 20th century	Modern, Bengal
122.	R.At/71/83	Cartoon—'Avaunt ! And quit my sight !' by G. N. Tagore 31 cm. × 25.5 cm. 20th century	Modern, Bengal
123.	R.At/80/266	Portrait of a child called 'Koto' by A. N. Tagore 25 cm. × 19 cm. 20th century	Modern, Bengal
124.	R.13444/S.298	Traveller and the lotus by A. N Tagore 23.9 cm. × 15.3 cm. 20th century	Modern, Bengal
125.	R.At/71/79	Cartoon—'Ball dance' by G. N. Tagore 25.5 cm. × 31 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
126.	R.At/73/174	Wonderland by G. N. Tagore 33 cm. × 31.3 cm. 20th century	Modern, Bengal
127.	R.523/S.301	Siddhas of upper air by A. N. Tagore 26.7 cm. × 17.7 cm. 20th century	Modern, Bengal
128.	R.At/72/130	A group of dancers (in crayon) by A. N. Tagore 38 cm. × 32 cm. 20th century	Modern, Bengal
129.	R.At/81/290	Dhumavati and Mina avatara (oils). Chinsurah 77.3 cm. × 62 cm. 20th century	Modern, Bengal
130.	R.At/83/571	Vulture—(ink-drawing) by Sisuranjan 72 cm. × 52.5 cm. 20th century	Modern, Bengal
131.	R.At/90/1328	An ink-sketch of the Indian Museum by Samir Biswas 45 cm. × 32.5 cm. 20th century	Modern, Bengal
132.	R.At/90/1520	Tomb of Job Charnock by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
133.	R.At/90/1536	Indian Museum by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
134.	R.At/90/1534	G. P. O. by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
135.	R.At/90/1538	Interior of the Indian Museum by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
136.	R.At/90/1533	St. Paul's Cathedral by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
137.	R.At/90/1527	Nakhoda Mosque by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
138.	R.At/90/1519	Asiatic Society by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
139.	R.At/90/1521	The Star Theatre by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
140.	R.At/90/1535	The National Library by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
141.	R.At/90/1532	Shahid Minar by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
142.	R.At/90/1516	High Court of Calcutta by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
143.	R.At/90/1526	Baboo Ghat by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
144.	R.At/90/1528	The Governor's House, Calcutta by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
145.	R.At/90/1525	Hare School by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
146.	R.At/90/1524	The Marble Palace of Calcutta by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
147.	R.At/90/1517	The Town Hall, Calcutta by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
148.	R.At/90/1522	Kalighat by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
149.	R.At/90/1531	The Jain Temple of Calcutta by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern
150.	R.At/90/1537	The Indian Museum by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
151.	R.At/90/1530	The Municipal Office of Calcutta by Rathin Moitra 72 cm. × 56.2 cm. 20th century	Modern, Bengal
152.	R.At/90/1529	Victoria Memorial Hall by Rathin Moitra 72 cm. × 56.2 cm. 20th century	Modern, Bengal
153.	R.At/82/129	A king unveiling a princess before a sage by Raja Ravi Varma 71.5 cm. × 92 cm. 19th century	Modern
154.	R.620/S.311	An elephant by Ishwari Prasad Varma (?) 30.4 cm. × 21.7 cm. 19th century	Modern
155.	R.13449/S.307	A lady at the window 19.8 cm. × 13.4 cm. 19th century	Modern

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Sl. No.	Acc No.	Description and size	School
156.	R.14406/S.294	Buddha and Mara's daughter by Sudhish (?) 26 cm. × 19.2 cm. 20th century	Modern
157.	R.14966/S.81	Gauranga with a *sanyasi* dancing (damaged) 19th century	Modern, Bengal
158.	R.621/S.313	A duck and a bird by Ishwari Prasad Varma (damaged) 30.6 cm. × 20.8 cm. 19th century	Modern
159.	R.14487	A man with an amphora— scene from Omar Khyyam by A. N. Tagore 25.2 cm. × 16.5 cm. 20th century	Modern, Bengal
160.	R.13452/S.316	Hara-Parvati 25 cm. × 17 cm. 19th century	Modern
161.	R.650/S.303	Lightning as a beautiful girl by M. D. Natesan 32.2 cm. × 27.5 cm. 20th century	Modern
162.	R.526	A man and a woman playing veena representing the summer season by A. N. Tagore (damaged) 20th century	Modern, Bengal
163.	R.13451/S.317	Sati by Nandalal Bose 30.5 cm. × 21.5 cm. 20th century	Modern, Bengal
164.	R.14407/S.291	Naga couple (set on a loose golden mount) 18 cm. × 11 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
165.	R.15018	A lady, a man and a cat in a home by G. N. Tagore 38 cm. × 28 cm. 20th century	Modern, Bengal
166.	R.13445/S.292	The Rana of Chittor with Queen padmini looking over from the fort by A. N. Tagore 16.5 cm. × 12 cm. 20th century	Modern, Bengal
167.	R.13443/S.296	A man presenting a flower to a lady by A. N. Tagore 20th century	Modern, Bengal
168.	R.At/73/190	A *Baul* (in crayon) by A. N. Tagore 37.7 cm. × 30.2 cm. 20th century	Modern, Bengal
169.	R.At/80/268	Face of a woman by A. N. Tagore 30.5 cm. × 25.5 cm. 20th century	Modern, Bengal
170.	R.At/79/238	A musician couple by Chugtai 57.2 cm. × 39 cm. 20th century	Modern
171.	R.522/S.297	Buddha and Sujata by A. N. Tagore 17.7 cm. × 24.6 cm. 20th century	Modern, Bengal
172.	R.At/71/85	Widows in the battlefield of Kurukshetra by G. N. Tagore 69 cm. 20th century	Modern, Bengal
173.	G.423	A Tibetan nobleman (oils) 35 cm. × 29.3 cm. (damaged) 19th century	Modern
174.	R.At/89/888	Visvasrava and Kubera before Brahma by Krishna Lal Das 49.5 cm. × 37.4 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
175.	R.At/89/885	Mali, Sumali and Malyavan to Brahma by Krishna Lal Das 49.2 cm. × 37.5 cm. 20th century	Modern, Bengal
176.	R.At/89/932	Rishvasringamuni in female company by Krishna Lal Das 40 cm. × 29.5 cm. 20th century	Modern, Bengal
177.	R.At/89/898	Nalakubera cursing Ravana, by Krishna Lal Das 49.5 cm. × 37.5 cm. 20th century	Modern, Bengal
178.	R.At/89/919	Harishchandra and wife with their dead son at the crematorium by Krishna Lal Das 44 cm. × 29 cm. 20th century	Modern, Bengal
179.	R.At/89/918	Harischandra's wife witnessing the death of her son by snakebite, by Krishna Lal Das 49.5 cm. × 38.5 cm. 20th century	Modern, Bengal
180.	R.At/89/887	Rakshasas being killed by the Narayaniastra by Krishna Lal Das 49.5 cm. × 37.7 cm. 20th century	Modern, Bengal
181.	R.At/89/890	The wedding of Nikasha with Visvasraba by Krishna Lal Das 50 cm. × 38 cm. 20th century	Modern, Bengal
182.	R.At/89/902	Agasta with Ilvala and Batapi as a lamb by Krishna Lal Das 49.5 cm. × 37.2 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
183.	R.At/89/894	Malyavan and Nikasha urging Ravana to free Lamka by Krishna Lal Das 48.8 cm. × 38 cm. 20th century	Modern, Bengal
184.	R.At/89/893	Ravana, Kumbhakarna and Vibhishana in meditation and getting Brahma's boon by Krishna Lal Das 50 cm. × 38 cm. 20th century	Modern, Bengal
185.	R.At/89/896	Ravana and Kubera fighting for the possession of the Pushpaka Ratha by Krishna Lal Das 50 cm. × 36.8 cm. 20th century	Modern, Bengal
186.	R.At/89/965	Khara and Dushana's death at the hands of Rama and Lakshmana by Krishna Lal Das 49.7 cm. × 38 cm. 20th century	Modern, Bengal
187.	R.At/89/1037	A wounded dog brought to Ravana's court by Krishna Lal Das 49 cm. × 37.5 cm. 20th century	Modern, Bengal
188.	R.At/89/1039	Lakshmana being renounced by Krishna Lal Das 49.7 cm. × 37.7 cm. 20th century	Modern, Bengal
189.	R.At/89/1040	Rama taking leave of Vibhishana and Hanumana before his demise by Krishna Lal Das 50.4 cm. × 37.4 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
190.	R.At/89/979	Rama being introduced to Hanumana by Krishna Lal Das 50.2 cm. × 37.7 cm. 20th century	Modern, Bengal
191.	R.At/89/978	Rama rescuing Savari by Krishna Lal Das 50.5 cm. × 37.7 cm. 20th century	Modern, Bengal
192.	R.At/89/1038	Durbasha and Lakshmana by Krishna Lal Das 50.5 cm. × 38 cm. 20th century	Modern, Bengal
193.	R.At/89/904	Gods complaining to Narayana of the rakshasas' atrocitics by Krishna Lal Das 50.2 cm. × 37.5 cm. 20th century	Modern, Bengal
194.	R.At/89/905	The meeting between Pavana and Anjana by Krishna Lal Das 50.5 cm. × 37.5 cm. 20th century	Modern, Bengal
195.	R.At/89/910	Ratnakara invoking Brahma and Narada by Krishna Lal Das 45.5 cm. × 37.5 cm. 20th century	Modern, Bengal
196.	R.At/89/911	Brahma, Narada and Valmiki by Krishna Lal Das Bharadvaja's ashrama 49.4 cm. × 37.5 cm. 20th century	Modern, Bengal
197.	R.At/89/908	Ratnakara trying to assault Brahma and Narada by Krishna Lal Das 50 cm. × 36.4 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
198.	R.At/89/967	Marichi and Ravana by Krishna Lal Das 50 cm. × 38 cm. 20th century	Modern, Bengal
199.	R.At/89/897	Vedavati cursing Ravana by Krishna Lal Das 49 cm. × 38.4 cm. 20th century	Modern, Bengal
200.	R.At/89/899	Ravana attacking the Hell by Krishna Lal Das 50.2 cm. × 36.7 cm. 20th century	Modern, Bengal
201.	R.At/89/973	Ravana contesting with Jatayu by Krishna Lal Das 48 cm. × 33.5 cm. 20th century	Modern, Bengal
202.	R.At/89/974	Abduction of Sita by Krishna Lal Das 49.5 cm. × 35 cm. 20th century	Modern, Bengal
203.	R.At/89/989	Hanumana meeting Sita at Ashokakanana by Krishna Lal Das 50.2 cm. × 8.5 cm. 20th century	Modern, Bengal
204.	R.At/89/987	Sita surrounded by *chedis* by Krishna Lal Das 48 cm. × 33.7 cm. 20th century	Modern, Bengal
205.	R.At/89/994	Minister Sarana showing Ravana the arrival of Rama's army in Lamka by Krishna Lal Das 49 cm. × 37.9 cm. 20th century	Modern, Bengal
206.	R.At/89/1013	Rama performing the Durga Puja by Krishna Lal Das 50.5 cm. × 37 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
207.	R.At/89/990	Capture of Hanumana by Rakshasas by Krishna Lal Das 48.7 cm. × 37 cm. 20th century	Modern, Bengal
208.	R.At/89/991	Hanumana burning Lamka by Krishna Lal Das 45.5 cm. × 38 cm. 20th century	Modern, Bengal
209.	R.At/89/1000	Waking up Kumbhakarna by Krishna Lal Das 46 cm. × 37.9 cm. 20th century	Modern, Bengal
210.	R.At/89/1001	Death of Kumbhakarna by Krishna Lal Das 50 cm. × 38 cm. 20th century	Modern, Bengal
211.	R.At/89/1010	Lakshmana killing Meghanada by Krishna Lal Das 50.5 cm. × 37.7 cm. 20th century	Modern, Bengal
212.	R.At/89/1014	Hanumana stealing the death-dart of Ravana from Mandodari by Krishna Lal Das 45.6 cm. × 38.4 cm. 20th century	Modern, Bengal
213.	R.At/89/1015	The death of Ravana by Krishna Lal Das 49.6 cm. × 38.4 cm. 20th century	Modern, Bengal
214.	R.At/89/1024	Sita taking refuge at Valmiki's by Krishna Lal Das 50 cm. × 38 cm. 20th century	Modern, Bengal
215.	R.At/89/1025	Sita with Lava and Kusha at Valmiki's by Krishna Lal Das 55.5 cm. × 37.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
216.	R.At/89/1032	Fall of Rama and Lakshmana at the hands of Lava and Kusha by Krishna Lal Das 45.5 cm. × 33.6 cm. 20th century	Modern, Bengal
217.	R.At/89/951	Dasaratha informs his subjects that Rama would succeed him by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
218.	R.At/89/997	Rama and Lakshmana imprisoned in *Nagapasha* by Krishna Lal Das 49.7 cm. × 38 cm. 20th century	Modern, Bengal
219.	R.At/89/943	Killing of Tadaka by Krishna Lal Das 45.5 cm. × 33.6 cm. 20th century	Modern, Bengal
220.	R.At/89/1022	Lakshmana leaving Sita in the forest 43.2 cm. × 32.3 cm. 20th century	Modern, Bengal
221.	R.At/89/1028	Rama's *Asvamedha* horse with the crier 50.3 cm. × 37.3 cm. 20th century	Modern, Bengal
222.	R.At/89/1019	At Ravana's court Hanumana opens his heart to show Rama's name inscribed there by Krishna Lal Das 45.5 cm. × 36.6 cm. 20th century	Modern, Bengal
223.	R.At/89/1031	Lava and Kusha bringing before Sita the capured Hanumana 49.8 cm. × 37.8 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
224.	R.At/89/1018	Sita's fire-ordeal by Krishna Lal Das 49.5 cm. × 37.8 cm. 20th century	Modern, Bengal
225.	R.At/89/1034	Sita entering the earth at Rama's court by Krishna Lal Das 44.5 cm. × 33.6 cm. 20th century	Modern, Bengal
226.	R.At/89/988	Indra offers ambrosia to Sita at night by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
227.	R.At/89/999	Rama entertains Gaduda with the sight of his *Dvaparalila* as Krishna by Krishna Lal Das 47 cm. × 33.6 cm. 20th century	Modern, Bengal
228.	R.At/89/998	Rama freed from the *Nagapasha* shows Gududa his *Dvaparalila* by Krishna Lal Das 49.6 cm. × 38 cm. 20th century	Modern, Bengal
229.	R.At/89/948	Rama and Lakshmana at the Siddhasrama to protect the rishis from the rakshasas by Krishna Lal Das 50 cm. × 38 cm. 20th century	Modern, Bengal
230.	R.At/89/945	Gautama cursing Ahalya by Krishna Lal Das 49.7 cm. × 37.8 cm. 20th century	Modern, Bengal
231.	R.At/89/950	Rama teaching Parasurama 'The Lesson' by Krishna Lal Das 49.8 cm. × 34.6 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
232.	R.At/89/900	Ravana, Meghanada, Kumbhakarna and Kumbhanagi by Krishna Lal Das 50.4 cm. × 37.5 cm. 20th century	Modern
233.	R.At/89/901	Indra being freed by Krishna Lal Das 48.4 cm. × 37.8 cm. 20th century	Modern
234.	R.At/89/971	Lakshmana drawing the boundary around Sita by Krishna Lal Das 50 cm. × 38.2 cm. 20th century	Modern
235.	R.At/89/909	Ratnakara being taken to task by his parents and wife by Krishna Lal Das 49.7 cm. × 37.8 cm. 20th century	Modern
236.	R.At/89/958	Bharata and Shatrughna coming to Ayodhya after hearing of Dasaratha's demise by Krishna Lal Das 49.7 cm. × 37.2 cm. 20th century	Modern
237.	R.At/89/954	Rama taking leave of Dasaratha by Krishna Lal Das 49.7 cm. × 37.2 cm. 20th century	Modern
238.	R.At/89/957	The demise of Dasaratha by Krishna Lal Das 50 cm. × 37.2 cm. 20th century	Modern

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Sl. No.	Acc No.	Description and size	School
239.	R.At/89/941	Vishvamitra soliciting the help of Rama and Lakshmana to Dasaratha for killing the rakshasa marauders by Krishna Lal Das 49.6 cm. × 38.2 cm. 20th century	Modern
240.	R.At/89/942	Vishvamitra on his way with Rama and Lakshmana to kill Tadaka rakshasi by Krishna Lal Das 50.2 cm. × 37.2 cm. 20th century	Modern
241.	R.At/89/913	Narada dictating to Valmiki by Krishna Lal Das 50.2 cm. × 37.5 cm. 20th century	Modern, Bengal
242.	R.At/89/934	Dasaratha's *'Putresthi-yagna'* by Krishna Lal Das 50.3 cm. × 38 cm. 20th century	Modern, Bengal
243.	R.At/89/1020	Rama listening to the messenger about Sita's character by Krishna Lal Das 50 cm. × 37.9 cm. 20th century	Modern, Bengal
244.	R.At/89/926	Dasaratha shooting at Andhamuni's son by Krishna Lal Das 50 cm. × 38.4 cm. 20th century	Modern, Bengal
245.	R.At/89/980	Rama's friendship with Sanjiva by Krishna Lal Das 50 cm. × 38 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
246.	R.At/89/922	Brahma, Vishnu and Narayana listening to music. Narayana melts into Ganga and pours into Brahma's kamandalu by Krishna Lal Das 50 cm. × 37.2 cm. 20th century	Modern, Bengal
247.	R.At/89/1035	A brahmin complains to Rama about the premature demise of his son by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
248.	R.At/89/996	Vibhishana and Rama by Krishna Lal Das 50 cm. × 27.5 cm. 20th century	Modern, Bengal
249.	R.At/89/933	Dasaratha, Rishysringa and Lomapada by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
250.	R.At/89/975	Rama, Lakshmana and Jatayu by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
251.	R.At/89/986	Ravana's patron deity meeting Hanumana by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
252.	R.At/89/984	Amgada with Hanumana and Sampati by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
253.	R.At/89/1021	Rama witnessing Ravan's portrait near sleeping Sita by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
254.	R.At/89/1023	Rama with the golden Sita by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
255.	R.At/89/889	Malyavan tells Nikasha to marry Visvasrava by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
256.	R.At/89/891	Nikasha tells Ravana to free Lamka by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
257.	R.At/89/892	Bhargava mediating between the fighting Ravana and Mandhata by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
258.	R.At/89/925	Dasaratha gifting his daughter Santa to Lomapada by Krishna Lal Das 50 cm.× 37.5 cm. 20th century	Modern, Bengal
259.	R.At/89/924	Indumati's death in king Aja's garden by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
260.	R.At/89/947	Rama's glance turns the prow into gold by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
261.	R.At/89/1042	Hanumana pining for Rama by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
262.	R.At/89/1012	Rama meeting Durga in Ravana's chariot by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
263.	R.At/89/883	Narada seeing Rama and Sita in Vaikuntha by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
264.	R.At/89/903	Agastya drinking up the ocean by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
265.	R.At/89/1030	Rama meeting Lava and Kusha by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
266.	R.At/89/960	Bharata and Kaikeyi by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
267.	R.At/89/929	Vashistha cursing his son by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
268.	R.At/89/928	Dasaratha in the presence of Andhamuni and his wife by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
269.	R.At/89/935	Dasaratha distributing *prasadam* to his wives by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
270.	R.At/89/1009	Killing of Mahiravana by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
271.	R.At/89/1016	Coronation of Vibhishana by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
272.	R.At/89/1017	Rama asks Sita to prove her chastity by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
273.	R.At/89/884	Narada with Brahma and Shiva by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
274.	R.At/89/1008	Killing of Taranisena by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
275.	R.At/89/1067	Bharata shooting at the flying Hanumana by mistake by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
276.	R.At/89/1006	Hanumana bumping off the illusory alligator by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
277.	R.At/89/1005	Kalanemi and Hanumana by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
278.	R.At/89/952	Manthara and Kaikeyi by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
279.	R.At/89/1004	Ravana and Kalanemi by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
280.	R.At/89/995	Ravana driving out Vibhishana by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
281.	R.At/89/976	Matangamuni and Savari by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
282.	R.At/89/923	Bhagirathi bringing down Ganga by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
283.	R.At/89/985	Hanumana setting out to Lamka in search of Sita by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
284.	R.At/89/983	Lakshmana chastising Sugriva by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
285.	R.At/89/912	Narada and Valmiki by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
286.	R.At/89/1041	Rama giving up life by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
287.	R.At/89/1003	Rama asking Hanumana to go to the Gandhamadana hill by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
288.	R.At/89/886	An elephant fighting with a tortoise by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
289.	R.At/89/966	Surpanakha before Ravana by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
290.	R.At/89/931	Dasaratha conferring with Rishis by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
291.	R.At/89/946	Rama absolving the gorgonised Ahalya by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
292.	R.At/89/977	Saran in youth by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
293.	R.At/89/930	Dasaratha and Vashistha by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
294.	R.At/89/972	Ravana abducting Sita by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
295.	R.At/89/895	Ravana's messenger to Kuvera by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
296.	R.At/89/964	The disfigurement of Surpanakha. by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
297.	R.At/89/1011	A messenger bringing dismal news to Ravana by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
298.	R.At/89/921	Kapilamuni burning out the sons of Sagararaja by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
299.	R.At/89/940	Guhaka and Rama by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
300.	R.At/89/939	Guhaka revolting against Dasaratha by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
301.	R.At/89/1026	Lava and Kusha singing before Valmiki by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
302.	R.At/89/959	Satrughna beating Manthara by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
303.	R.At/89/956	Guhaka ferrying over Rama, Lakshmana and Sita by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
304.	R.At/89/1036	Rama executing Sambuka by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
305.	R.At/89/1002	Lakshmana hit by *Shaktishela* by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
306.	R.At/89/881	Heti abducting Brahma's daughter by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
307.	R.At/89/927	Dasaratha has killed Andhamuni's son by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
308.	R.At/89/981	Sugriva's coronation by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
309.	R.At/89/882	Hara and Parvati come across Heti's abandoned child by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
310.	R.At/89/982	Death of Bali by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
311.	R.At/89/969	Killing of the *'Mayamriga'* by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
312.	R.At/89/970	Sita admonishing Lakshmana by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
313.	R.At/89/968	Sita asks for the golden deer by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
314.	R.At/89/962	Bharata worshipping Rama's sandals by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
315.	R.At/89/961	Bharata accepting Rama's sandals by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
316.	R.At/89/963	Rama, Lakshmana and Sita in forest by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
317.	R.At/89/955	Rama, Lakshmana and Sita with Guhaka by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
318.	R.At/89/953	Kaikeyi importuning Dasaratha for boons by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
319.	R.At/89/949	Rama breaking the *Haradhanu* by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
320.	R.At/89/938	The discovery of child Sita by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
321.	R.At/89/937	Dasaratha appoints Vashistha teacher of his children by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
322.	R.At/89/936	Dasaratha's wives with their children by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
323.	R.At/89/944	Indra enticing Ahalya by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
324.	R.At/89/992	Hanumana brings Sita's ring to Rama and Lakshmana by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
325.	R.At/89/906	Hanumana on his mother's lap desiring the Sun by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
326.	R.At/89/907	The child Hanumana wishes to catch the Sun by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
327.	R.At/89/916	Harishchandra as Chandala by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
328.	R.At/89/920	King Sagara's sons about to belabour Kapilamuni by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
329.	R.At/89/917	Saivya as maid-servant sending Rohitasva to cull flowers by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
330.	R.At/89/914	Sukracharya burning Danda to death for insulting his daughter by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
331.	R.At/89/915	Vishvamitra turning away Harishchandra from the Rayal palace by Krishna Lal Das 50 cm. × 37.5 cm. 20th century	Modern, Bengal
332.	R.At/89/1208	Portrait of Nandalal by A. N. Tagore 38 cm. × 31.2 cm. 20th century	Modern, Bengal
333.	R.At/73/179	A tree 33 cm. × 24.5 cm. 20th century	Modern, Bengal
334.	R.At/73/178	A Bhutia man before a mountain by A. N. Tagore 32 cm. × 31.2 cm. 20th century	Modern, Bengal
335.	R.At/73/184	A peasant by A. N. Tagore 49 cm. × 37 cm. 20th century	Modern, Bengal
336.	R.At/73/186	A jug by A. N. Tagore 49 cm. × 37 cm. 20th century	Modern, Bengal
337.	R.At/81/320	A couple with a child by by A. N. Tagore 20.5 cm. × 14 cm. 20th century	Modern, Bengal
338.	R.At/86/684	An archer (ink-drawing) by A. N. Tagore 12.5 cm. × 8.7 cm. 20th century	Modern, Bengal
339.	R.At/86/686	Face of a deer (ink-drawing) by A. N. Tagore 12.6 cm. × 8.7 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
340.	R.At/86/683	A Japanese lady (ink-drawing) by A. N. Tagore 17.5 cm. × 6.3 cm. 20th century	Modern, Bengal
341.	R.At/73/191	(A) Face of a man wearing a Gandhi cap 7.3 cm. × 10 cm. (B) Facial profile of a servant 7.3 cm. × 10 cm (C) A man reading newspaper by A. N. Tagore 10 cm. × 7.3 cm 20th century	Modern, Bengal
342.	R.AT/90/1369	Jagaddhatri (oils) 79 cm. × 63 cm. 20th century	Modern, Bengal
343.	R.AT/84/424	Three ladies by Jamini Ray 70 cm. × 40 cm. 20th century	Modern, Bengal
344.	R.AT/88/878	*Kaliyadamana* (*pata* painting) 77.5 cm. × 47 cm. 19th century	Modern, Orissa
345.	No number	Krishna with Gopies (oils)—Chinsurah 77 cm. × 61 cm. 19th century	Modern, Bengal
346.	R.14316	Rama's coronation (oils)—Chinsurah 77 cm. × 61 cm. 19th century	Modern, Bengal
347.	No number	Madonna (oils) 47 cm. × 36 cm. 19th century	Modern, Bengal
348.	R.At/82/432	*Sitaharana* (oils) 50 cm. × 38 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
349.	No number	Bust frontal portrait of a man (oils) 51 cm. × 38 cm. 20th century	Modern, Bengal
350.	R.At/82/435	A man attending a woman by Bamapada Banerjee (oils) dated 1926	Modern, Bengal
351.	R.At/82/437	Mother and child by Bamapada Banerjee (oils) 50.5 cm. × 38.5 cm. 20th century	Modern, Bengal
352.	R.At/82/434	A king drawing out his sword and two women (oils) by Bamapada Banerjee 5 cm. × 38 cm. 20th century	Modern, Bengal
353.	R.At/82/433	Manthara and Kaikeyi (oils) by Bamapada Banerjee 51 cm. × 38 cm. dated 1906	Modern, Bengal
354.	No number	A king with a prince and princess standing in water (oils) by Bamapada Banerjee 51 cm. × 38 cm. dateed 1923	Modern, Bengal
355.	No number	Bust portrait of a European male (oils) 50.5 cm. × 40 cm. 19th century	Modern
356.	S.3333	Nature scene—tree, river, house and hills (oils). Sign illegible 81.5 cm. × 67 cm. 19th century	Modern
357.	S.3283	Flower (oils) 63.5 cm. × 51.5 cm. 19th century	Modern

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Sl. No.	Acc No.	Description and size	School
358.	No number	River with boats (oils) 76.5 cm. × 61.5 cm. 19th century	Modern
359.	S.3313	Lambs (oils) 38.7 cm. × 31.5 cm. 19th century	Modern
360.	No number	A Burmese lady with a cigar (oils) 86 cm. × 64 cm. 20th century	Modern
361.	No number	Chariots and soldiers in array (oils) 1 m. 45 cm. × 76 cm. 19th century	Modern, Bengal
362.	S.3332	A European household scene (oils) 67 cm. × 78 cm. 19th century	Modern
363.	No number	A lady on horseback with a drawn sword and with hounds in a battlefield (European oil-painting) 2 m. 13 cm. × 1 m. 22 cm. *c.* 19th century	Modern
364.	R.At/87/787	A Japanese lady with flowers 21.5 cm. × 15 cm. 20th century	Modern
365.	R.At/87/769	A ten-armed goddess by G. N. Tagore 14.5 cm. × 9 cm. 20th century	Modern, Bengal
366.	R.At/87/785	A scene of a riverbank 13.5 cm. × 10 cm. 20th century	Modern, Bengal
367.	R.At/87/788	A lady with a pitcher. Ink-sketch by Asit Kumar Haldar 24 cm. × 18.3 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
368.	R.At/87/770	A lady. Abstract style by G. N. Tagore 12.6 cm. × 9 cm. 20th century	Modern, Bengal
369.	R.14474	A lady inside a palace lighted up with lamps. Painted by Rameshwar Prasad Varma 37.8 cm. × 22 cm. 20th century Nahar collection	Modern, Bengal
370.	R.14409	Abhimanyu fighting at Kurukshetra by Narayan Prasad Varma 48 cm. × 33.7 cm. Nahar collection 20th century	Modern, Bengal
371.	R.14573	A lady with a flower. On silk by Ishwari Prasad Varma 66 cm. × 50 cm. 20th century Nahar collection	Modern, Bengal
372.	R.14489	A scene from Omar Khyyam by A. N. Tagore 19.2 cm. × 13 cm. 20th century Nahar collection	Modern, Bengal
373.	R.14491	A lady before a tomb by Rameshwar Prasad Varma 17 cm. × 11.2 cm. 20th century Nahar collection	Modern, Bengal
374.	R.At/87/786	A bride and a bridegroom by Sanat Kar 28.5 cm. × 20.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
375.	R.14501	Sheikh Sa'di and a prince on horseback by Rameshwar Prasad Varma 25.3 cm. × 17 cm. 20th century Nahar collection	Modern, Bengal
376.	R.14483	Two ladies and two butterflies by Ishwari Prasad Varma 29.5 cm. × 18.8 cm. 20th century Nahar collection	Modern, Bengal
377.	R.At/87/798	Portrait of Sudhira Nandi by Atul Bose (oils) 38.7 cm. × 27.5 cm. 20th century	Modern, Bengal
378.	R.14576	A woman in frontal stance. On cloth 53 cm. × 35 cm. 20th century Nahar collection	Modern
379.	R.14570	Avalokiteshvara. Ajanta copy. On cloth 52 cm. × 74 cm. 20th century Nahar collection	Modern
380.	R.14571	Buddha's wife and son. Ajanta copy. On cloth 52 cm. × 74 cm. 20th century Nahar collection	Modern
381.	R.14581	A bare-breasted lady doing up her hair 55 cm. × 45 cm. 20th century Nahar collection	Modern
382.	R.14579	Portrait of a queen with persian inscription 71 cm. × 44 cm. 19-20th century Nahar collection	Modern

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Sl. No.	Acc No.	Description and size	School
383.	R.14580	A lady engaged in her toilette (oils) 74.5 cm. × 47.5 cm. 20th century Nahar collection	Modern
384.	No number	Dhruva with dragon Both sides. On silk 71 cm. × 53.5 cm. 20th century Nahar collection	Modern
385.	R.14574	A lady in white—frontal stance On silk. 33.5 cm. × 52 cm. 20th century Nahar collection	Modern
386.	R.14490	Omar Khyyam by Rameshwar Prasad Varma 18.5 cm. × 11.5 cm. Nahar 20th century	Modern, Bengal
387.	R.At/90/1410	Sketches by Ramkinkar Baich Seventeen in number 20th century	Modern, Bengal
388.	R.At/90/1356	Sketches by A. N. Tagore Twenty-five in number 20th century	Modern, Bengal
389.	R.At/90/1409	Sketches by Ramkinkar Baich Twenty-six in number 20th century	Modern, Bengal
390.	R.At/73/199	'My Guru' by Nandalal Bose Display 20th century	Modern, Bengal
391.	R.14577	Toilette by Ishwari Prosad Varma On silk. Display 20th century Nahar collection	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
392.	R.13450	Shiva and Parvati by Ishwari Prosad Varma. Display 20th century	Modern, Bengal
393.	R.527	Abhisarika. By A. N. Tagore. Display Late 19th century	Modern, Bengal
394.	R.At/72/122	Rabindranath Tagore by A. N. Tagore. Display 20th century	Modern, Bengal
395.	R.At/72/123	Ganesh-Janani by A. N. Tagore Display 20th century	Modern, Bengal
396.	R.At/72/190	'Rabi-baul'. Pastel-drawing by A. N. Tagore. Display 20th century	Modern, Bengal
397.	R.At/80/268	A lady by the window by A. N. Tagore. Display 20th century	Modern, Bengal
398.	R.13442	Rukmini writing letter to Krishna by A. N. Tagore. Display 20th century	Modern, Bengal
399.	R.At/86/677	'Masgul' by A. N. Tagore. Display 20th century	Modern, Bengal
400.	R.At/73/215	Enchanted Forest by G. N. Tagore. Display 20th century	Modern, Bengal
401.	R.15018	An artist at work by G. N. Tagore. Display 20th century	Modern, Bengal
402.	R.At/71/85	Kurukshetra by G. N. Tagore. Display 20th century	Modern, Bengal
403.	R.At/73/214	Ajan by G. N. Tagore. Display 20th century	Modern, Bengal
404.	R.At/71/80	The rising son-in-law of Bengal by G. N. Tagore. Display 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
405.	R.At/71/69	A human face by Rabindranath Tagore. Display 20th century	Modern, Bengal
406.	R.At/71/70	A person in adoration by Rabindranath Tagore. Display 20th century	Modern, Bengal
407.	R.At/73/196	Kali by Nandalal Bose. Display 20th century	Modern, Bengal
408.	R.622	Last Journey of Yudhisthira by Nandalal Bose. Display 20th century	Modern, Bengal
409.	R.At/73/195	Parthasarathi by Nandalal Bose Display 20th century	Modern, Bengal
410.	R.At/81/313	Sculptor by Nandalal Bose Display 20th century	Modern, Bengal
411.	R.At/73/197	Sati by Nandalal Bose. Display 20th century	Modern, Bengal
412.	R.At/81/315	Worship of a deity by Nandalal Bose. Display 20th century	Modern, Bengal
413.	R.At/73/198	'Jal' by Nandalal Bose. Display 20th century	Modern, Bengal
414.	R.649	Raja of Puducotta by Jamini Prakash Gangopadhyaya. Display 20th century	Modern, Bengal
415.	R.At/72/133	A scenery of Kurseong by Samarendranath Tagore. Display 20th century	Modern, Bengal
416.	R.At/73/192	Krishna consorting in the guise of a Gopi by Sunayani Debi Display 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
417.	R.13447	'Sati' by Sukhalata Rao. Display 20th century	Modern, Bengal
418.	R.623	Bridging over to Lamka by K. Venkat Appa. Display 20th century	Modern
419.	R.13440	'Inspiration' by Samarendranath Gupta Display 20th century	Modern, Bengal
420.	R.At/73/210	Last Day of Chaitanya by Kshitindranath Majumdar. Display 20th century	Modern, Bengal
421.	R.At/73/209	Sreerup Goswami and Meerabai by Kshitindranath Majumdar. Display 20th century	Modern, Bengal
422.	R.At/72/127	Radha and Krishna by Kshitindranath Majumdar. Display 20th century	Modern, Bengal
423.	R.624	'Chitra' by Kshitindranath Majumdar Display 20th century	Modern, Bengal
424.	R.At/79/240	'Waiting' by Asit K. Haldar. Display 20th century	Modern, Bengal
425.	R.At/81/317	'Flute player' by Asit K. Haldar. Display 20th century	Modern, Bengal
426.	R.651	'Spirit of the Wood' by Asit K. Haldar Display 20th century	Modern, Bengal
427.	R.At/87/799	'Jesus Christ' by Jamini Ray. Display 20th century	Modern, Bengal
428.	R.At/87/802	'Sita in Ashokakanana' by Jamini Ray. Display 20th century	Modern, Bengal
429.	R.At/87/813	'Flight to Egypt' by Jamini Ray Display 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
430.	R.At/79/249	'Mother' by Jamini Ray. Display 20th century	Modern, Bengal
431.	R.At/88/814	A lady with a pitcher. Display 20th century	Modern, Bengal
432.	R.At/87/800	'Women' by Jamini Ray. Display 20th century	Modern, Bengal
433.	R.At/81/291	'Waterfall' (oils) by Debiprasad Roy Chaudhury. Display 20th century	Modern, Bengal
434.	R.At/79/238	'Anarkali' by Md. Abdur R. Chugtai Display 20th century	Modern
435.	R.At/82/440	'A Village Scene'. Pastel by Gopal Ghosh. Display 20th century	Modern, Bengal
436.	R.At/83/594	Lady after Bath (oils) by Satish Chandra Sinha. Display 20th century	Modern, Bengal
437.	R.At/89/993	Rama subduing the Occean by Krishnalal Das. Display 20th century	Modern, Bengal
438.	R.At/89/1053	'Life' by Hrishikesh Deb Barman. Display 20th century	Modern, Bengal
439.	R.At/90/1197	'Mournful Vigil' by G. N. Tagore. Display 20th century	Modern, Bengal
440.	R.At-90/1186	pencil-sketch of Debendranath Tagore at Ranchi by A. N. Tagore 20.2 cm. × 16.2 cm. 20th century	Modern, Bengal
441.	R.At/90/1200	A female rider with a man driving a chariot amidst clouds. Pencil-sketch by Ishwari Prasad Varma after an original by A. N. Tagore 21.2 cm. × 17 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
442.	R.At/90/1161	A pair of oxen. Ink-sketch 24.4 cm. × 22.5 cm. 20th century	Modern, Bengal
443.	R.At/90/1185	Debendranath Tagore. Pencil-sketch by A. N. Tagore 20.2 cm. × 12.5 cm. 20th century	Modern, Bengal
444.	R.At/90/1133	An old court-firman in Bengali script with a seal 19.2 cm. × 14 cm. 19th century	Modern, Bengal
445.	R.At/90/1209	Portrait of Toto. Pastel-sketch by A. N. Tagore 35.2 cm. × 30 cm. 20th century	Modern, Bengal
446.	R.At/90/1187	Pencil-sketch of a *panda* at Puri by A. N. Tagore 20th century	Modern, Bengal
447.	R.At/90/1192	An ink-sketch of a seated lady by A. N. Tagore 23.5 cm. × 17.8 cm. 20th century	Modern, Bengal
448.	R.At/90/1296	A bare-bodied man with a stick on a riverbank. Line-sketch 11.5 cm. × 14.2 cm. 20th century	Modern, Bengal
449.	R.At/90/1407	Tree. On silk 47.8 cm. × 27 cm. 20th century	Modern, Bengal
450.	R.At/90/1406	Lobster by Nandalal Bose 40 cm. × 22.2 cm. 20th century	Modern, Bengal
451.	R.At/90/1146	Saraswati with veena and lotus 55.6 cm. × 31.5 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
452.	R.At/90/1355	An art-educationist among villagers by Debiprosad Ray Chowdhury 56.5 cm. × 33 cm. 20th century	Modern, Bengal
453.	R.At/90/1367	Radha and Krishna 54.4 cm. × 27.4 cm. 20th century	Modern, Bengal
454.	R.At/90/1190	A man and a woman by A. N. Tagore 25.4 cm. × 20 cm. 20th century	Modern, Bengal
455.	R.At/90/1183	A man and a woman. Pencil-sketch by A. N. Tagore 22 cm. × 13.2 cm. 20th century	Modern, Bengal
456.	R.At/90/1194	Shakuntala and her friend in monochrome wash by A. N. Tagore 28 cm. × 20 cm. 20th century	Modern, Bengal
457.	R.At/90/1297	A crow. Water colour 21.2 cm. × 14.3 cm. 20th century	Modern, Bengal
458.	R.At/90/1366	The Sun God. On a cardboard 54 cm. × 42 cm. 20th century	Modern, Bengal
459.	R.At/90/1182	Kacha and Debjani. Pencil-sketch by A. N. Tagore 25.3 cm. × 20 cm. 20th century	Modern, Bengal
460.	R.At/90/1188	An unconscious man being carried away 24.8 cm. × 13.6 cm. 20th century	Modern, Bengal
461.	R.At/90/1195	A village scene 14 cm. × 11 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
462.	R.At/90/1206	Mother and son 93 cm. × 69 cm. 20th century	Modern, Bengal
463.	R.At/90/1199	A sculpture by Asit K. Haldar 13.5 cm. × 10.6 cm. 20th century	Modern, Bengal
464.	R.At/90/1193	Face of a hill-woman byA. N. Tagore 25.3 cm. × 16 cm. 20th century	Modern, Bengal
465.	R.At/90/1196	A scene in the dark—water and trees by A. N. Tagore 31 cm. × 12.2 cm. 20th century	Modern, Bengal
466.	R.At/90/1132	A court-document in Bengali script Sealed with. Persian inscription 17.5 cm. × 13.2 cm. 19th century	Modern, Bengal
467.	R.At/90/1210	'Abhisar' by A. N. Tagore With Bengali inscription 25.5 cm. × 20.2 cm. 19th century	Modern, Bengal
468.	R.At/90/1184	Poet in a Storm by A. N. Tagore Reverse : pencil-sketch of a lady in robe 17.6 cm. × 12.5 cm. 20th century	Modern, Bengal
469.	R.At/90/1198	Santhal women dancing and a man playing a *dholak* by Nandalal Bose 41.5 cm. × 27 cm. 20th century	Modern, Bengal
470.	R.At/90/1213	A lady before a hut and a *'tulsimancha'* by Gopal Ghosh (Done on hardboard) 32.3 cm. × 25 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
471.	R.At/90/288	Durga and Kalkiavatara (oils) Chinsura 77.5 cm. × 62.5 cm. 19th century	Modern, Bengal
472.	R.At/80/282	A village scene—(oils) by R. N. Chakraborty 76 cm. × 56 cm. 20th century	Modern, Bengal
473.	R.At/81/294	Radha and Krishna with Gopies in a fullmoon night 89 cm. × 75 cm. 19th century	Modern, Bengal
474.	R.At/80/283	A village scene—(oils) 85 cm. × 69.5 cm. 20th century	Modern, Bengal
475.	R.At/82/431	Shakuntala and Durbasha muni (oils) by Bamapada Banerjee 52 cm. × 39.5 cm. 20th century	Modern, Bengal
476.	R.At/82/436	A king with a princess and two female attendants—(oils) by Bamapada Banerjee 51 cm. × 38 cm. 20th century	Modern, Bengal
477.	R.At/81/289	Left : Kali Right : Rama on throne with Hanumana prostrating before him (oils) Chinsura 76 cm. × 61 cm. 19th century	Modern, Bengal
478.	R.At/85/663	Portrait of a lady—(oils) by Satish Sinha 89 cm. × 63 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
479.	R.At/83/570	Vulture in ink by Sishuranjan 72 cm. × 52 cm. 20th century	Modern, Bengal
480.	R.At/82/430	A prince and a princess (oils) by Bamapada Banerjee 61 cm. × 75 cm. 20th century	Modern, Bengal
481.	R.At/81/287	Left : Kali Right : Krishna (oils) 60.5 cm. × 77.5 cm. Chinsura 19th century	Modern, Bengal
482.	R.At/80/257	Baul singer by Jamini Ray (oils) 90.5 cm. × 70.5 cm. 20th century	Modern, Bengal
483.	S.3346	Mother and child. Western 81.5 cm. × 88 cm. 19-20 century	Modern
484.	R. No number	A large reproduction of dancing scene from Bagh 2 m. 29 cm. × 1 m. 21 cm. 20th century	Modern
485.	R. No number	A large reproduction from Bagh A white elephant with mahout and ladies 2 m. 38 cm. × 1 m. 21 cm. 20th century	Modern
486.	R.14578	Portrait of Rai Monilal Nahar Bahadur. Display 20th century Nahar collection	Modern
487.	R.14522	Portrait of a lady in frontal stance (damaged) 55 cm. × 45.5 cm. 19th century Nahar collection	Modern

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Sl. No.	Acc No.	Description and size	School
488.	R.At/90/1259	Lithograph print. Hari-Hara 40 cm. × 36 cm. 19th century	Modern, Bengal
489.	R.At/90/1260	Lithograph print. Tara 38.7 cm. × 29.8 cm. 19th century	Modern, Bengal
490.	R.At/90/1518	Sanskrit college by Rathin Moitra 71 cm. × 56.2 cm. 20th century	Modern, Bengal
491.	R.At/72/131	Portrait of his servant Radhu Biswas by A. N. Tagore 56.5 cm. × 45 cm. 11.2.1930	Modern, Bengal
492.	R.At/73/173	The Song of Solitude by G. N. Tagore 74 cm. × 54 cm. 20th century	Modern, Bengal
493.	R.At/90/1204	(A) Landscape by Hirachand Dugar 56.2 cm. × 38.5 cm. (B) Landscape with hilly terrain and temples by Hirachand Dugar 56.2 cm. × 39 cm. (C) A hilly landscape by Hirachand Dugar 56.2 cm. × 39 cm.	Modern
494.	R.At/90/1215	A village scene with cottages, two women and two crows by Gopal Ghosh 38 cm. × 30.2 cm. 20th century	Modern, Bengal
495.	R.At/90/1212	A woman by a tomb with flowers By Gopal Ghosh 27 cm. × 16.7 cm. 20th century	Modern, Bengal

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Sl. No.	Acc No.	Description and size	School
496.	R.At/90/1191	Shahjahan in deathbed with daugther Jahanara at his side by A. N. Tagore Done on a wooden plaque 35.5 cm. × 25.2 cm. 20th century	Modern, Bengal
497.	R.At/90/1205	The Ganges in the Rainy season at Jiagunj 53.5 cm. × 40 cm. 1950	Modern, Bengal
498.	R.524/S.304	Dvipanvita by A. N. Tagore 26.5 cm. × 17.5 cm. 20th century	Modern, Bengal
499.	R.At/84/618	A three-quarter face in classic style 33.5 cm. × 22.5 cm. 20th century	Modern, Bengal
500.	R.At/73/216	Prince Mahendra going to Ceylon on an Ashokan mission by G. N. Tagore 21 cm. × 18 cm. 20th century	Modern, Bengal
501.	R.14484	A woman feeding a parrot by Mahabir Prasad Varma 21 cm. × 27.2 cm. 20th century	Modern
502.	R.14529	A lady on a garden-terrace by Mahabir Prasad Varma 30.6 cm. × 23 cm. 20th century	Modern
503.	R.14442	Faizi, the poet laureate at Akbar's court, copied by Ishwari Prasad Varma 26 cm. × 15.4 cm.	Modern
504.	R.14531	Radha and Krishna by Mahabir Prasad Varma 31.5 cm. × 23.5 cm.	Modern

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Sl. No.	Acc No.	Description and size	School
505.	R.14494	A lion by Ishwari Prasad Varma 29.2 cm. × 21 cm.	Modern
506.	R.14413	A prince seated on a tree 26.5 cm. × 14.3 cm.	Modern
507.	R.14416	Todi Ragini 30 cm. × 19.8 cm.	Modern
508.	R.14493	A scene from Laila Majnun by Ishwari Prasad Varma 30 cm. × 21 cm.	Modern
509.	R.14486	Two ladies on a throne enjoying music 32 cm. × 23.8 cm.	Modern
510.	R.14492	Birds on trees by Ishwari Prasad Varma 32.2 cm. × 21.4 cm.	Modern
511.	R.14474	A lady surrounded by sheep in a palace by Mahabir Prasad Varma 37.9 cm. × 21.9 cm. 20th century	Modern
512.	R.14409	Abhimanyu surrounded by enemies at Kurukshetra by Narayan Prasad Varma 48 cm. × 33.7 cm.	Modern
513.	R.At/87/789	An apple by A. N. Tagore 25.5 cm. × 20.5 cm. 20th century	Modern, Bengal
514.	R.14990	A scene from Omar Khyaam by A. N. Tagore 24 cm. × 16.5 cm. 20th century	Modern, Bengal
515.	R.At/79/236	Mother & Child by Abdur Rahman Chugtai 56 cm. × 42 cm. 20th century	Modern
516.	R.At/82/439	A fisherman angling in a river 56 cm. × 38 cm. 1978	Modern

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Sl. No.	Acc No.	Description and size	School
517.	R.At/79/237	Painting of a bearded man by Abdur Rahman Chugtai 57 cm. × 34 cm. 20th century	Modern
518.	R.At/82/441	Watercolour painting of a mountain scene 55.5 cm. × 38.5 cm. Date : 6 June, 1966	Modern, Bengal
519.	R.At/79/239	A woman by Abdur Rahman Chugtai 56 cm. × 40.5 cm.	Modern
520.	R.At/90/1309	Painting on ivory—Radha & Krishna in a lotus-pool Early 20th century	Modern, Bengal
521.	R.At/72/124	Debendranath Tagore by A. N. Tagore. 62 cm. × 47 cm. Date : 1894	Modern, Bengal
522.	R.At/90/1145	Shiva dancing in a fierce form by Priya Gupta 41 cm. × 29.5 cm. 20th century	Modern, Bengal
523.	R. No number	Water colour copy of an ancient mural showing an elephant, horse-riders and retainers Date : 27 Deccember, 1949 (damaged)	Modern, Orissa

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BOOK REVIEW

***Select Works of Benoytosh Bhattacharya* edited by Dr. Shyamalkanti Chakravarti. Benoytosh Centenary Committee, Shastri Villa, Naihati 743 165, West Bengal, 1997, Pages 190 + 12, Price Rs. 440/-**

The book under review is edited by Dr. Shyamalkanti Chakravarti who himself is an established writer on Indology. As the Director of Indian Museum he has doubtlessly accomplished a task which is highly laudable. Benoytosh Bhattacharya belonged to that extraordinary breed of Bengali savants, born at the turn of the nineteenth century, whose memory would never fade away in the annals of serious studies of our past civilization. The splendid array of articles, a number of which were presumed lost as Dr. Chakravarti avers in his editorial note covers diverse subjects as widely different as astrology (Movement of Saturn and what it indicates) to a Memorandum on Post Puberty Marriage, and The Nine Gems in the Court of Vikramaditya to untouchability or Monarchy versus Democracy. Each of the articles is extremely thought-provoking even to this day when Indology is thought to have sufficiently advanced. The articles are supplemented by elaborate reference notes at the end making it apparent that the revered author possessed the acumen of judging the problems, pros and cons, in astonishing depth often citing original references from ancient texts as well as inscriptional sources.

A few nudging extracts from the articles are cited below.

Page 51 : 'Rightly or wrongly, writers on Ancient Hindu Polity did not believe as much in democracy as we do in modern days. They did not believe in absolute monarchy either, but in a limited monarchy, by which the power of the monarch was limited or circumscribed by a council of ministers.'

Both Kautilya's *Arthashastra* and the *Mahabharata* have been analysed in depth to assay the statement. This has undoubtedly a serious bearing on the present day Indian polity saturated from top to bottom with corruption and inequity. Can't we learn a thing or two from our ancient lores ?

Page 94 : 'Those who are behind this great movement for the removal of untouchability should see that they do not create bitterness by trespassing into the sphere of personal and fundamental rights of man and by insisting on inter-dining and inter-marriage.

Barriers to inter-dining and intermarriage can vanish only when public opinion is educated and by the influence of time. In order to remove this social barrier great efforts are also necessary on the part of the untouchables themselves. They have to educate themselves, they must be cultured, they must be men of influence...'

The view expressed here is eminently rational and exhorts modesty. Ancient Sanskrit verses are quoted from Hemadri's *Prayascitta-Khanda* and examples cited from Asoka's *dandasamata*–equality before the eyes of law and the recrudescence of discrimination under the Brahmanical Sungas.

The last two articles of the book are in Bengali exposing the nature of Tantra power under the Hindus and the Buddhists.

The first article is a fascinating account of a Bengali poet at the court of Bhoja (1010-1050 A.D.) with extracts quoted in Sanskrit.

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In fine one may heave a long sigh and exclaim : 'How nostalgic ! And how timely has this centenary volume come out ! Because the state of Indology in our country at the moment presents a bleak scenario and a sightless future !'

By way of criticism it may be pointed out that there are tell-tale signs of the printer's devil in the book which may be put to rights in the next edition.

SUJIT NARAYAN SEN

***Traditional dress of the Meiteis* by Dr. (Smt.) K. Sobita Devi. Bhuban Publishing House, Imphal, Manipur, 1998, Pages 143 + 125 illustrations, 53 in colour + 1 map, Price Rs. 550/-**

Manipur, the most important state in North-East India, the home of *Rāslīlā* dance and magnificent handicraft reflect a blend of tribal tradition with Vaishnava lyricism. Here the art of handloom weaving is a speciality of women where weaving and embroidery are elegantly combined to create bold and lovely geometrical patterns with floral animal and bird motifs for different types of *phanek*, and the *kanap*, the beautiful lower garment of women.

This book is a commendable work of Sobita Devi who collected both mythological and historical information to present before us the evolution of Meitei traditional dress and their technology of manufacture as also the cultural significance.

In the first chapter she has very deftly discussed the mythical foundation of the art of weaving. Her research on this subject throws an illuminating light on the dresses and costumes of the Meitei Kings of ancient Manipur covering almost thousand years from the 1st century. She has drawn both mythological and historical sources to establish her views. Each and every dress she has described in her research work has been corroborated by drawings and illustrations. There is no doubt that the traditional dresses. of the Meitei people are associated with myths and legends, their songs, ceremonies and dances besides portraying their rituals and religious beliefs.

In ancient Manipur the Meitei community consisted of seven *salais* or clans and all these clans contributed greatly to the development of different types of dresses with multifarious designs. According to Meitei mythology the king Nagada Lairen Pakhangba who reigned in the 1st century A.D. assumed both serpent and mortal form and had advised his queen to weave royal dress after the designs on the different parts of his serpent body. The importance of textile in the Meitei society can be ascertained by the shawl Leirum which still constitutes one of the essential items of bridal gifts. It is also believed in the Meitei society that the women without the knowledge and training of the art of weaving is not regarded as the perfect woman symbolizing wealth and prosperity.

New cultural elements from the east particularly from the Shans as well as Chinese Seri culture also influenced the dress of the Meitei people. In the succeeding periods weaving craft flourished to a great extent. What is more important is that in the 11th-12th century we come across the names of royal weavers which are mentioned in the manuscript *Loiyumba Shilyen*. It should be noted in this connection that the Indian art is primarily anonymous and the name of the artist is seldom mentioned. But in Manipur the historical records refer the names of royal weavers such as Laikakshu in the 2nd-3rd century A.D. Ako in the 5th-6th century and Roso in the reign of Loiyumba in the 11th-12th century including Nootan Phisaba, Heisu Naha Phisa and others. Thanks are due to Sobita Devi because her assiduous efforts and research work have enabled us to know the names of royal artists who formed the guiding force of the traditional dress of the Meiteis.

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Meitei dresses are always connected with rituals and ceremonies. Thus the presentation of the idol of Vishnu by the Shan king to Meitei king Kikumba resulted a set of Hindu dress like *dhoti*, *kurtā*, thin wrapper all in white for the Brahmin priest. In the late 16th-17th century embroidered silk clothes became very popular which is evident in the creation of dress *Pumit Phariek*, a highly valuable garment, meant for the eldest princess born through the mother of Angam Royal house and the eldest sister of the brother who succeeds to the throne, as Meitei king.

Dress was so important in the life of the Meitei people that the king even presented award clothes known as *Mana Phi* to his talented subjects in various fields. The offer of *Wariphak Phurit* as gallantry award was also introduced by king Khagenba in the late 16th-17th century.

It is believed that the technique of weaving was first introduced by the goddess Panthoibi whereas the Loin loom was introduced by Laishna, the chief queen of Nongda Lairein Pakhangba. Cotton as well as silk were used in weaving. Since the early days vegetable dye was used to give the different hue and shades. The artisans of Manipur used three distinct types of embroidery namely rounded and circular pattern on the border of *phanek*. The pattern is stylised and abstract. The artisans also depict realistic natural objects like the Sun, Moon, Star, cock, horse, elephant, peacock etc. The third type is known as Sha Nga comprising animal and fish design. Besides the method of applique embroidery, block printing technique of decoration is also observed on fabric.

The author has also beautifully delineated seasonal colours like red, green, yellow, white, saffron, black and their significance. Certain rites and regulations the artisans had to maintain in the making of *Ningthouphi* (royal apparel) which was decorated in the pattern of the skin or slough of Pakhangba, the mythical serpent god. Lastly the author discusses the cultural significance of the traditional dress of the Meiteis and analyses from three aspects moral, aesthetic and ideological point of view.

The book is very useful to the scholars and students dealing with textile art of India. The overall get up and coloured illustrations are no doubt an added attraction of the book while printing mistakes should have been restricted.

Sipra Chakravarti

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COPPER SMELTING AT THE HINTERLAND OF ANCIENT PORT CITY TAMRALIPTA

MIDNAPUR, SINGHBHUM & JANGAL MAHAL

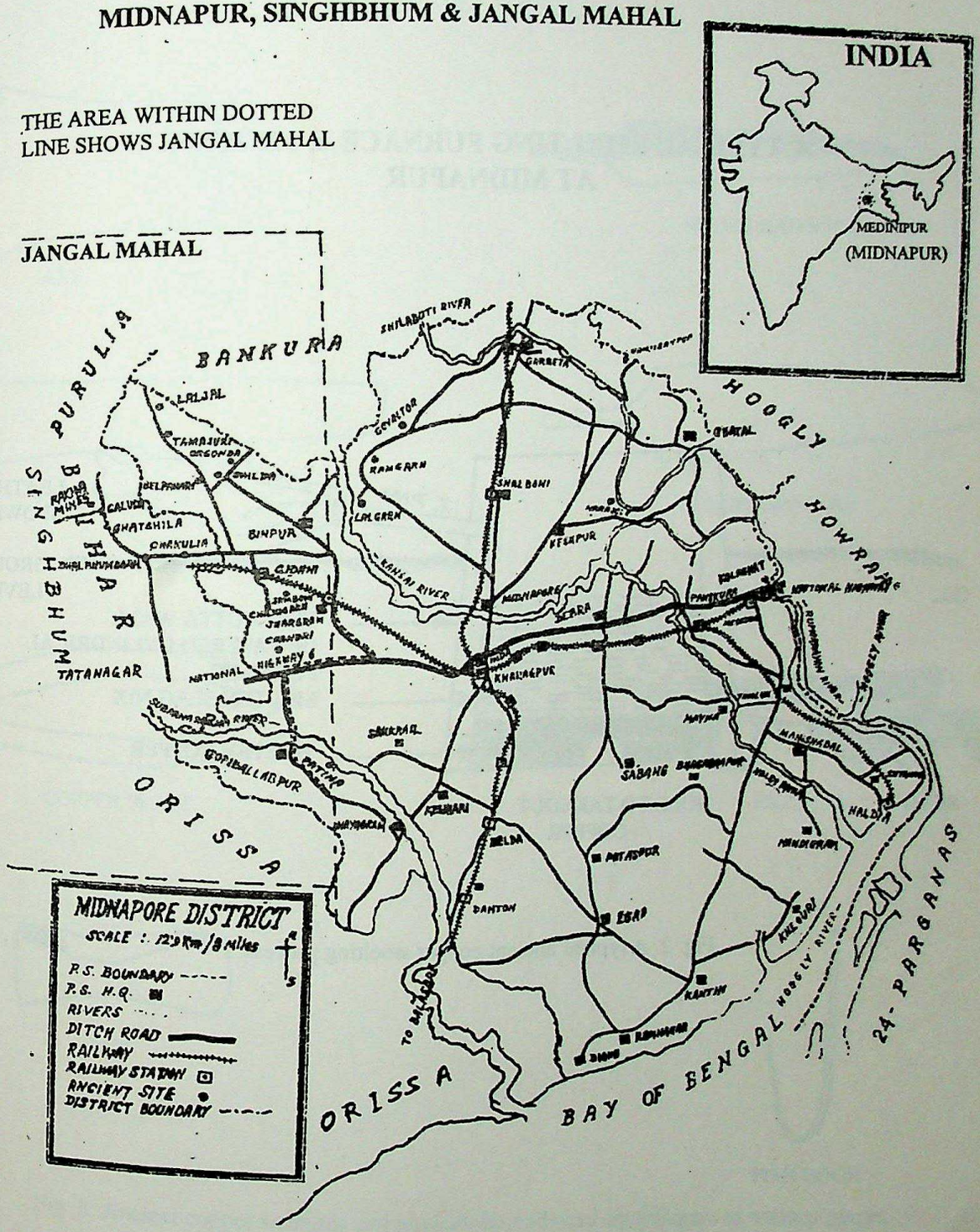

Fig. 1. Jangal Mahal along with Midnapur district of West Bengal.

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A TYPICAL SMELTING FURNACE & PROCESS AT MIDNAPUR

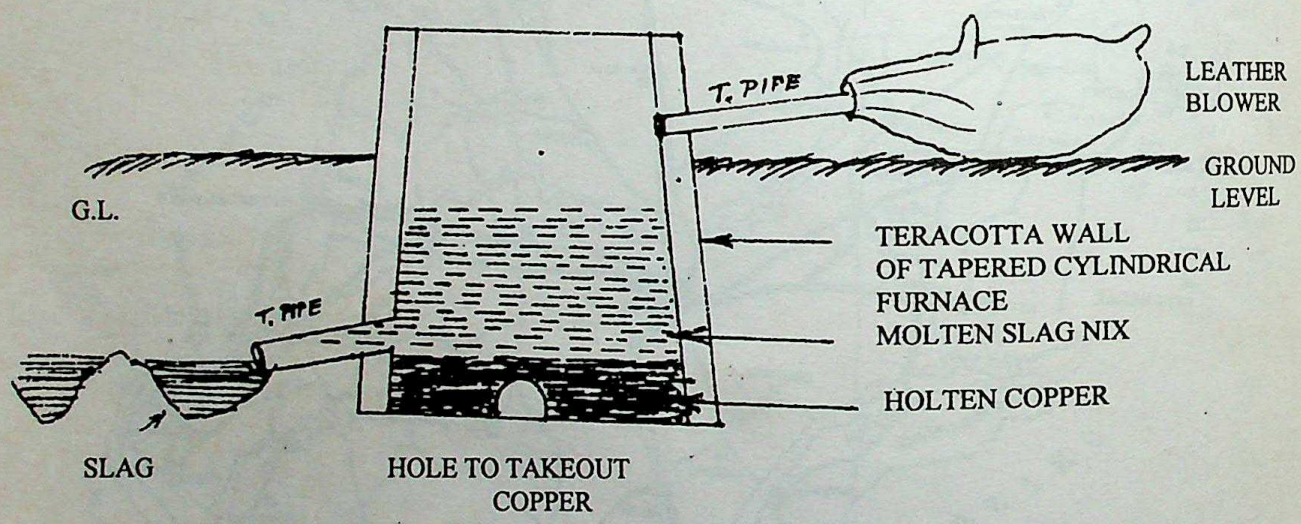

Fig. 2. A typical ancient copper smelting process.

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CHANCE COLLECTION OF ANCIENT COPPER IMPLEMENTS & WEAPONS
(KEPT IN MUSEUMS)

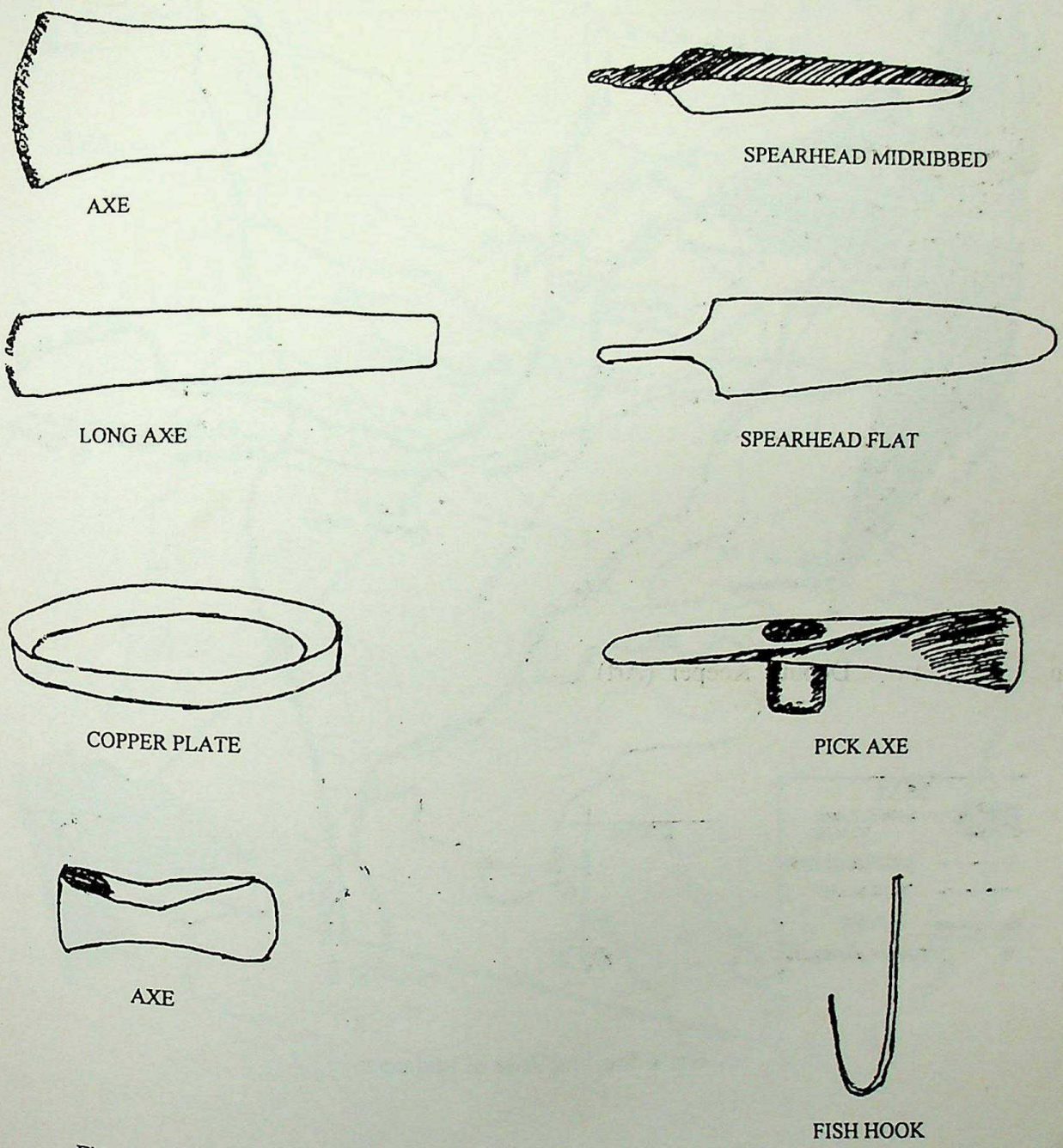

Fig. 3. Ancient copper weapons and implements collected by villagers at various places.

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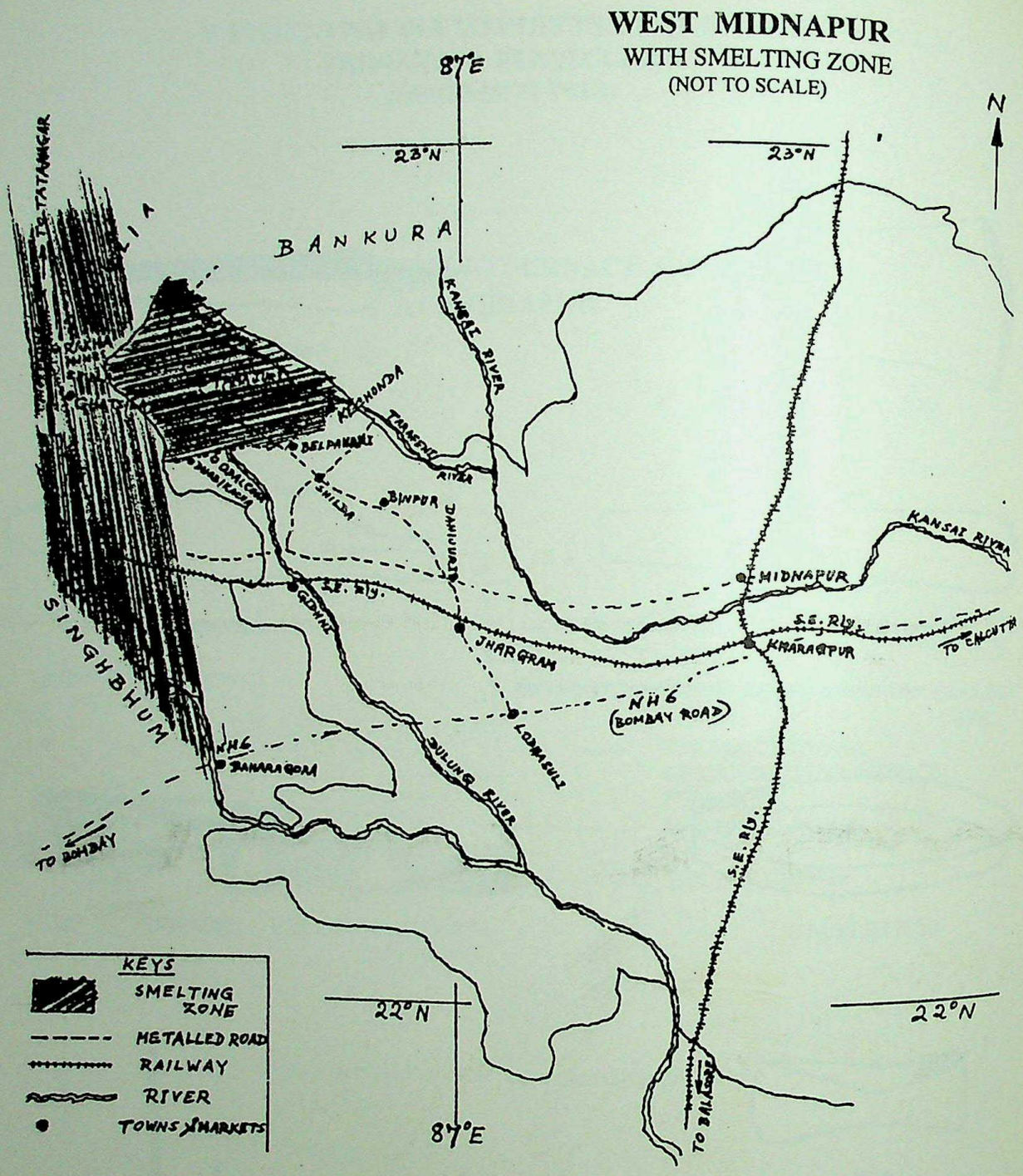

Fig. 4. Smelting Zone of Midnapur.

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TRANSPORT OF COPPER FROM SMELTING ZONE TO CHALCOLITHIC AREA

(BURDWAN, BIRBHUM & MIDNAPUR DISTRICTS)

(NOT TO SCALE)

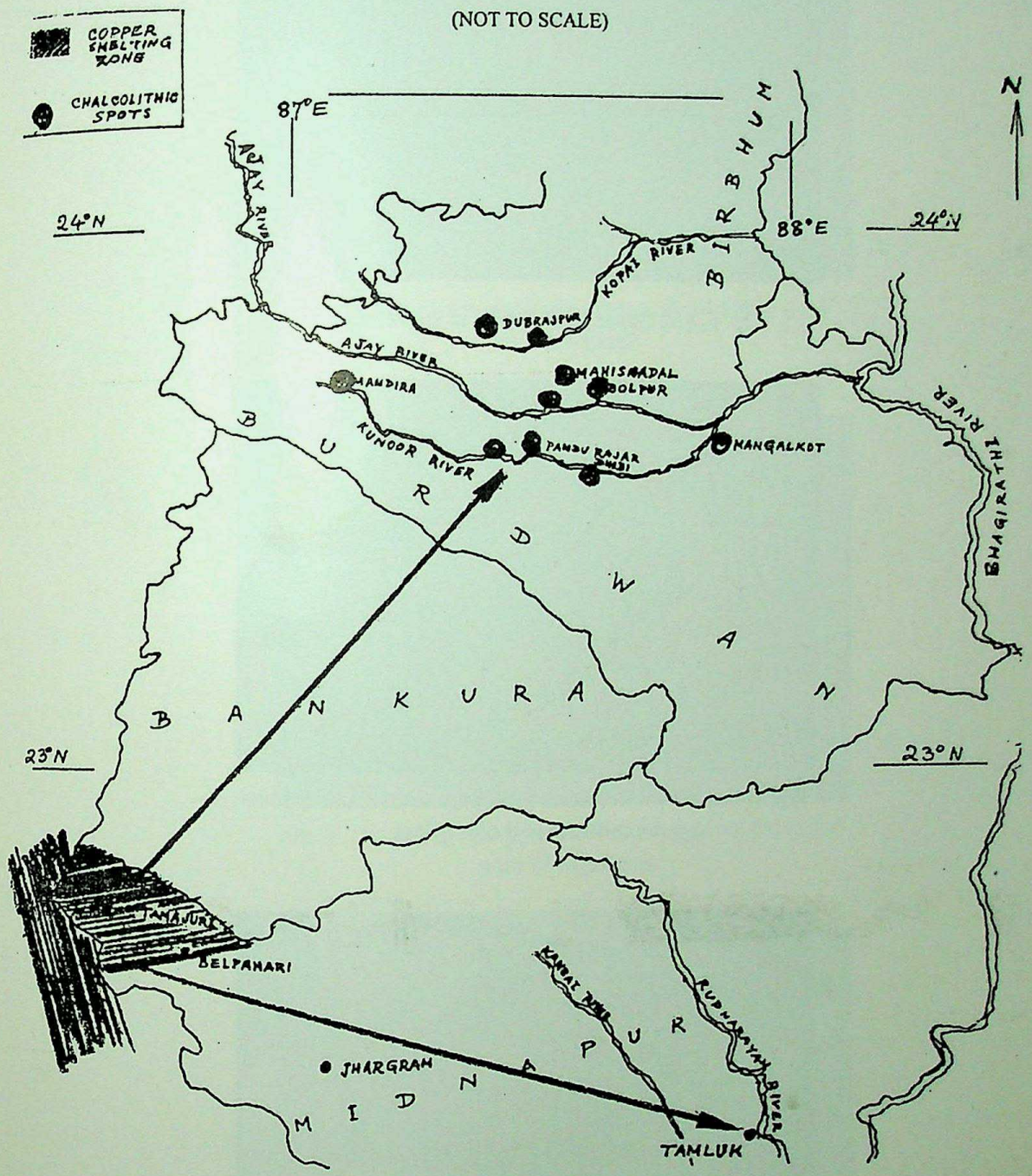

Fig. 5. Transport of smelted copper to Chalcolithic spots and Tamralipta.

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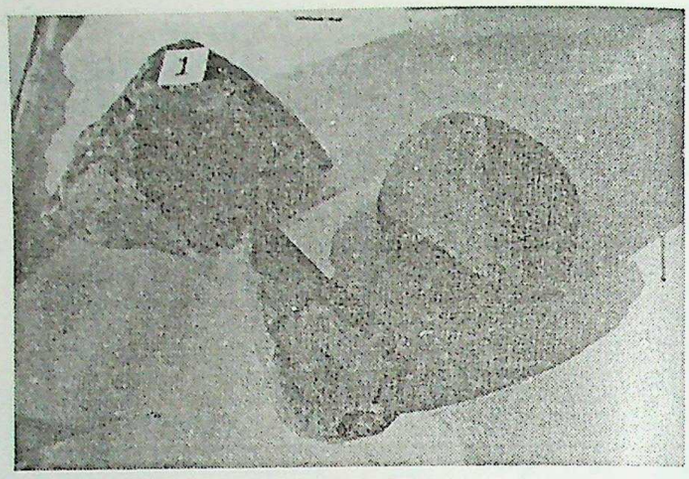

Fig. 6. (A) Stone tools found at smelting sites.

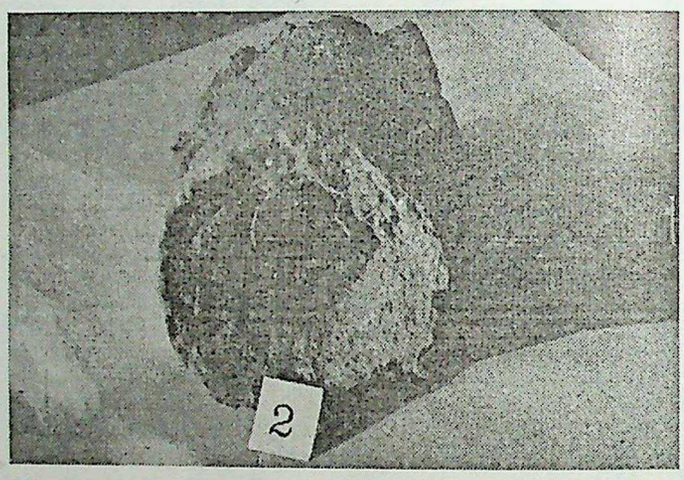

Fig. 6. (B) Broad terracotta pipe fragment probably used for outflow of molten slag.

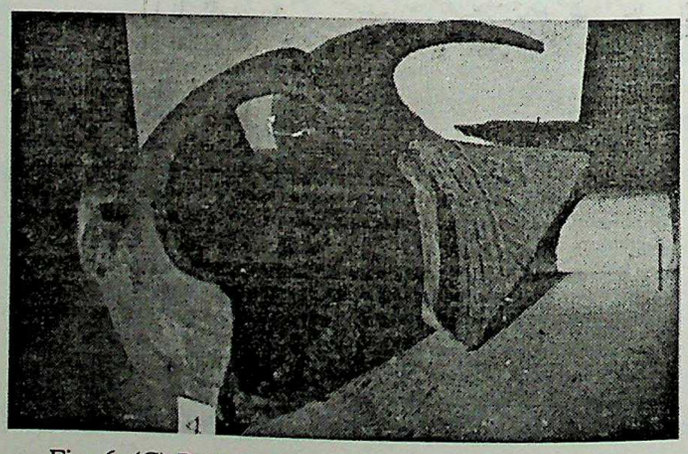

Fig. 6. (C) Pottery pieces found near smelting site.

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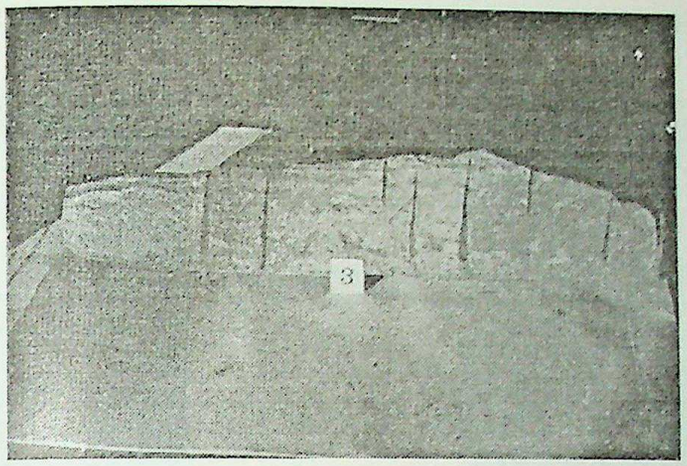

Fig. 6. (D) Graduated long stone slab probably used as level gauge

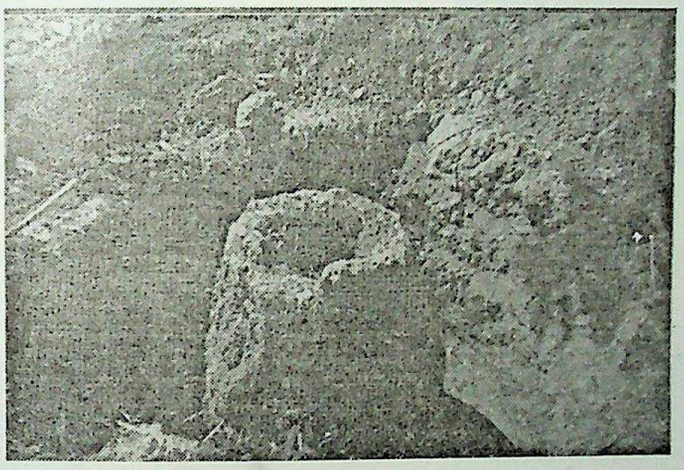

Fig. 6. (E) A dug out typical ancient copper smelting furnace of Midnapur.

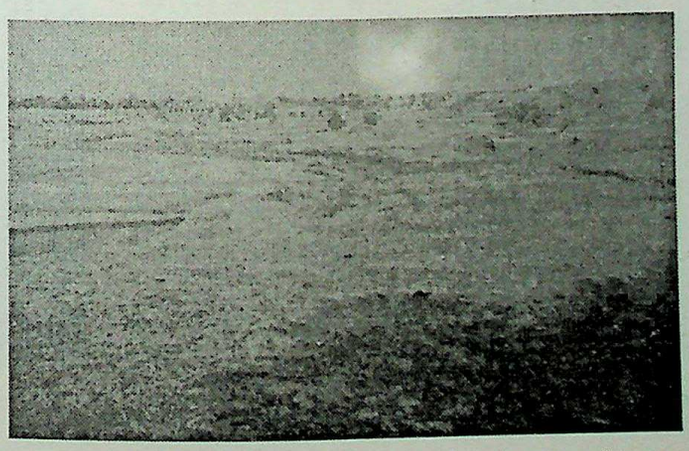

Fig. 6. (F) River front at Kechonda showing slag dumps.

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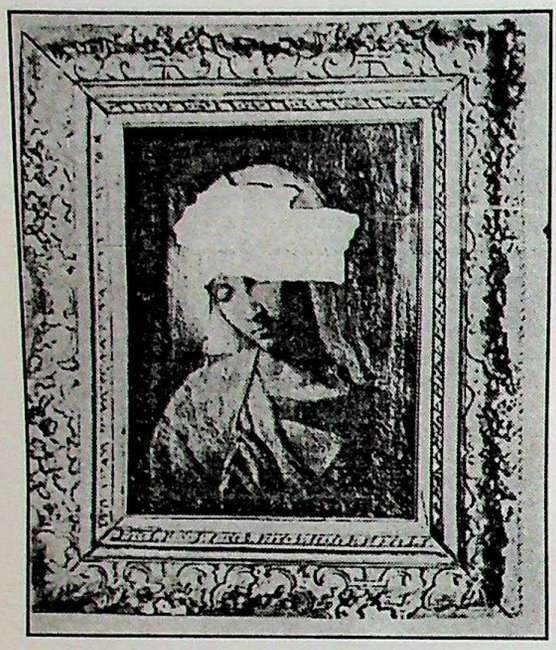
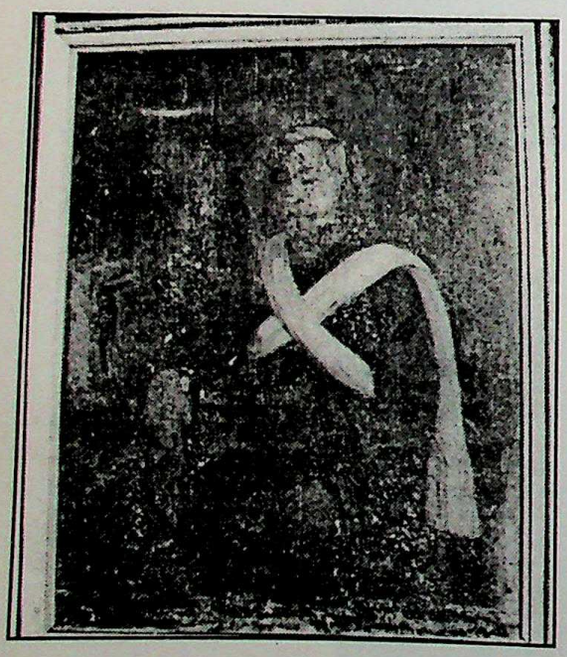
A NOTE ON RESTORATION OF TWO OIL PAINTINGS



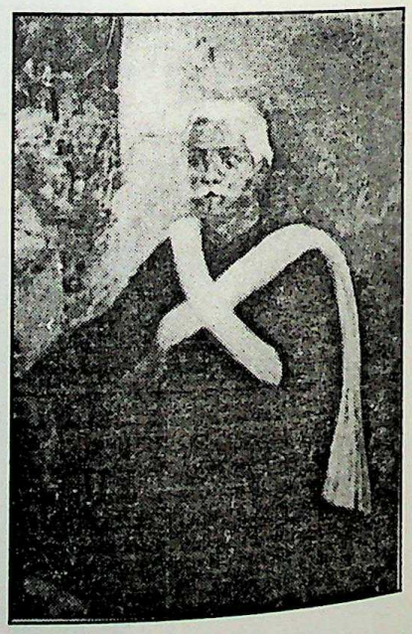
Before treatment

After treatment

Madona (oil painting)



Before treatment



After treatment

Raja Peary Chand Mitra (oil painting)

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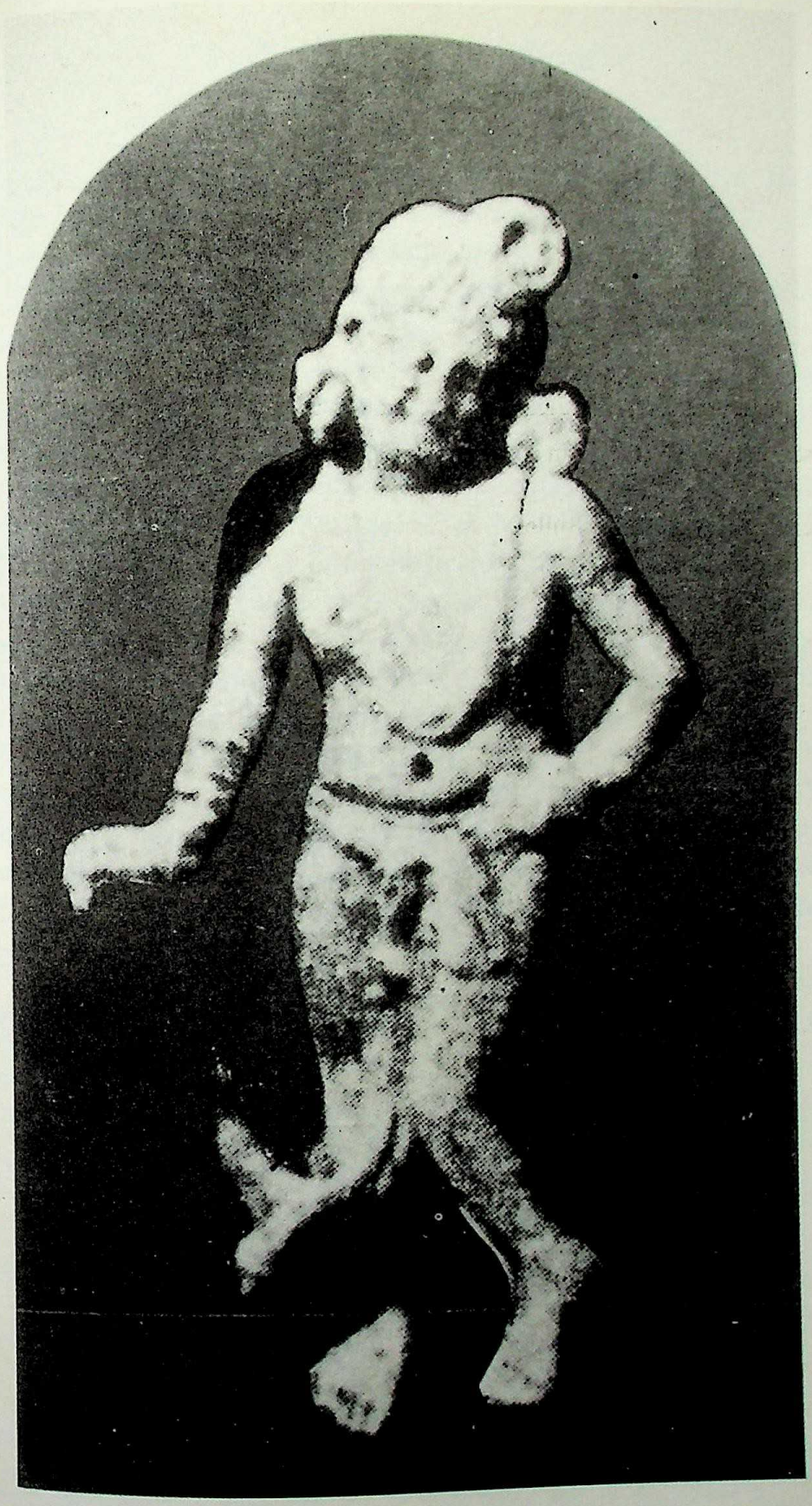

Ashoka — the Great Emperor.

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EDITORIAL NOTE

The Present volume of the Indian Museum Bulletin incorporates the proceedings of the seminar on *Maurya and the National integration* held in the first week of February, 1997. The seminar deliberated on the sources, excavated sites, materials, the empire, the socio-economic condition, literature, language and script, religion art and architecture as well as minor arts related to the Maurya period of Indian history. An exhibition on Asoka and his *times* highlighting the rich antiquarian remains and archaeological finds of the Maurya rule was also arranged on this occasion. This was the year when the country celebrated the 2300th birth anniversary of Asoka, the great emperor of ancient India. The success of the seminar accelerated a few more contributions on the related topic particularly dealing with the recent discoveries in the archaeological field of India and abroad. In a series of a good number of research papers, the scholars of India, Sri Lanka and Bangladesh have covered the politico-religious and social scenario of the Maurya empire. The literary data on the history of the dynasty, the script and scriptures of the period was also scrutinised meticulously. The archaeological evidences such as ideals of sculptural art, architecture, minor antiquities, epigraphic and numismatic records were dealt with in a number of presentations. The Buddhism and non-Buddhist philosophical systems of the period have drawn the attention of the contributors as also the achievements in the field of science and technology. Two interesting papers on the portraiture of emperor in art form and an astrological analysis to ascertain the chronological sequences of the emperor's life, particularly to unfold his date of birth and death will offer a new direction to the Asokan studies.

April, 2001
Indian Museum, Calcutta

Shyamalkanti Chakravarti
Director/Secretary

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THE MAURYA EMPIRE INDIA AND THE WORLD

B. N. MUKHERJEE

A

There are perhaps "few parts of the world better marked off by nature" (*i.e.* by the mountain chains and the sea) "as a region or realm by itself than the Indian subcontinent",[1] now divided into the territories of the Republic of India, Pakistan and Bangladesh. Human activities commenced in parts of the subcontinent in hoary antiquity. The process of urbanization started in the north-west by the 6th millennium B.C., the Harappan (or Indus) civilization flourished in the late 3rd millennium and early 2nd millennium B.C.[2], and a long known tradition of having literary texts was initiated with the composition of the majority of the verses of the *Ṛigveda* in about the middle of the 2nd millennium B.C. Yet the process of fostering communicational and cultural links between the far-flung areas of the subcontinent commenced only in about the second quarter of the 1st millennium B.C. Brahmanical culture, backed by the ruling powers, reached from the north-west and through the north Indian plains to the areas of Videha, Magadha and perhaps Aṅga (all now in Bihar).[3] Different dialects of Prakrit, born out of the interactions between Sanskrit and regional dialects, diffused over a wide territory different forms of the same language (though non-Sanskritic languages like Austric (Austro-Asiatic) speeches continued in non-Brahmanised pockets).[4] The script called later as Brāhmī, which was widely used in *c.* 3rd century B.C., as attested by Aśokan edicts, should have come into use by or before the 6th century B.C. since by the end of that century the help of Brāhmī had been obtained to create the script known as Kharoshṭī.[5] North Indian Brahmanised and/or Buddistic culture infiltrated through the eastern and western coastal areas up to the lower Deccan, perhaps by *c.* 5th-4th century B.C. The Aśokan edicts of the 3rd century B.C., writeen in the Prakrit language and the Brāhmī script and found in lower Deccan, must have been meant to be read by at least a part of literate public or to be listened to by the illiterate men when read out to them. So Prakrit must have been understood in the zone of a Dravidian speech (or speeches?). Had that not been the case, Aśoka would have issued edicts in a Dravidian language (Tamil or Proto-Tamil?) as his officials prepared Aramaic and Greek edicts for the Greek and Aramaic speaking peoples in the Indian borderlands (especially in Yona and Kamboja).[6] The evidence of the discoveries at the *c.* 4th-3rd century B.C. level at the Amaravati stūpa

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area (Andhra Pradesh) of potsherds inscribed with Prakrit inscriptions in Brāhmī characters,[7] which are "remarkably reminiscent of those found at Anuradhapura" of *c.* 450-350 B.C.,[8] surely indicates the advent of Prakrit and Brāhmī and also of Buddhistic culture in the eastern Deccan by *c.* 4th century B.C., if not by a still earlier date.[9]

The Aśokan edicts in Prakrit and Brāhmī, discovered at Girnar in Gujarat and at Sopara in western Maharashtra, have been found in places covered mainly by Indo-Aryan languages. This evidence presupposes Brahmanisation or so-called Aryanization of the territory substantially earlier than the Maurya age, so that Prakrit could have been used as a local dialect not only in the period of the Sātavāhanas, but also in that of Aśoka.

The inroad of the north Indian culture into upper central Deccan is indicated by the inclusion of Aśmaka (or Aśvaka or Assaka) in the list of sixteen Mahājanapadas of the 6th century B.C., all of which were in the areas of Indo-Aryan culture and ruled by speakers of Indo-Aryan speeches. Aśmaka or Assaka perhaps included the Nizamabad and Karimnagar districts of Andhra Pradesh and parts of north-eastern Maharashtra together with the area of Adam (situated about 55 to the south-east of Nagpur), which has yielded a seal of the Asaka janapada.[10]

Thus a loose cultural unity, which did not necessarily eclipse the regional varieties, bound the major part of the subcontinent against the background of a stable geographical unity. It appears from the writing of Megasthenes of the last quarter of the 4th century B.C. (as quoted by later authors), the subcontinent (or the greater part of it), including the land of Pandaia or the Pāṇḍya country of the far south, was called India.[10a]

B

Political unity to India or to its major part was provided by the exploits of the Maurya emperor Chandragupta (*c.* 324-301 B.C.). and the conquest (or reconquest) of Kaliṅga by Aśoka (*c.* 273-236 B.C.). Apparently the vast Maurya dominion was called Jambudvīpa in several versions of the first Minor Rock Edict (and also as *paṭhavi* <*pṛithivī*), literally meaning "earth" and here implying the empire of Aśoka in its Nittur version).[11] If the reference to *Jambudvīpa,* used in the sence of denoting a continent in the *Mahāvagga* of the *Vinaya Pitaka*[12] antedates Aśoka, then he may be considered to have chosen for his empire a name already known as denoting a continent (or really the then known world?) in Indian cosmography.[13]

In any case, the Mauryas provided political unity to the greater part of the subcontinent and part of its north-western borderlands. The *Arthaśāstra* of Kauṭilya, which may be at least substantially datable to the Maurya age, refers to *deśa* ("country") as *pṛithivī* ("earth") and describes it as the land stretching from the Himalayas to the sea (Indian Ocean) and

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transversly measuring a thousand yojanas, and calls the whole territory as the Chakravartikshetra (*i.e.* the domain of an emperor "whose chariot have their wheels rolling everywhere" without obstruction).[14] The idea put forth by the *Arthaśāstra* had been realised in the Maurya period (*c.* 324-187 B.C.) On the other hand, to Kauṭilya, the major part of whose treatise, including the doctrine of maṇḍala (VI, 1 and 2), deals with kingdoms and not empire, might have conceived of the Chakravartikshetra after witnessing the rise of the Mauryas.

The term "empire" (Latin *imperium*) presupposes "a large kingdom or world state of vast dimensions, multiplicity of constituent parts and great might"[15]. All these factors were applicable to the land under the Mauryas. In fact, if the control over a vast territory, the rule of a very powerful authority over peoples of different cultures or variations of a culture (or cultures) are among the main criteria for an empire, then the Mauryas had an empire, at least up to the period of Aśoka. However, unlike the Kushāṇa empire, it was more homogenous and Indian in character. Magadha, with iron/and copper ore within its reach, a navigable river (the Ganges) under its command and a naturally fortified capital (Rājagṛiha) as its royal residence, was destined, with the succession of able kings, to become a large kingdom. Magadha did become a vast kingdom under the Nandas, inspite of their low (Śūdra) social origin, and one of them was called in the tradition recorded in the Purāṇas as an *ekarāṭ* ("the sole monarch of the earth"). But their contemporary sources do not allow us to be precise about the limits of the domain of the Nandas. On the other hand, the evidence of the findspots and internal testimonies of the inscriptions of Aśoka and other reliable data do help us to map out the vast Maurya empire. The idea of having a sprawling empire could have been inspired not only by the example of the Nandas, but also so, more gainfully, by that of the Achaemenid empire, which had a part of the north-west India within its limits for at least some time and which ended in *c.* 330 B.C. and so only a few years before the foundation of the Maurya kingdom (in *c.* 324 B.C.).

The empire obviously consisted of big administrative units or provinces, whcih could have been divided into lesser units of different grades or sizes. Magadha was no doubt the metropolitan province, its traditional capital in the Maurya age (Pāṭaliputra) having been the seat of power in the empire. The Bhabru edict refers to Aśoka as the king of Magadha. It was probably directly ruled by the Maurya king with the help officials. But its administrative limits, which must have been larger than its geographical limits (in s.w. Bihar), cannot be precisely determined. However, since there is no indication of a provincial capital in contemporary north India, Magadha, like the Bengal presidency of the British period, might have included a great part of north India, from the Maurya possessions in "Bengal" (*i.e.* in the northern section of West Bengal and Bangladesh around Puṇḍranagara and in the south-western section of the former around Tāmralipti), and including *inter alia,* Bihar, Nepalese Tarai (?) and U.P., to the limits of the province (Gandhāra), of which Takshaśilā (now in the Rawalpindi district) was the capital. Again, the limits of the province, having

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Takshaśilā as its capital, could have been either within the traditional limits of Gandhāra (Peshawar and Rawalpindi districts) or could have meant nearly the whole area of modern Pakistan (excopting Baluchistan). Either this or the first province included parts of Indian Punjab, Haryana, Himachal Pradesh and Jammu?). Gedrosia (in Baluchistan), Arachosia (Yona) (in s.e. Afghanistan) and Paropamisadai (Kamboja) (in n.e. Afghanistan to the south-east of the Hindukush), all added to the Maurya empire as a result of a treaty between Chandragupta and Seleucus Niketor, were three small provinces in the region of the north-western frontiers. According to Arrian, the satrap (governor) or Arachosia was Sibyrtios during the reign of Sandrakottos (Chandragupta).[16] Wḥśw (Vakshu) was frobably the governor of Kamboja during the reign of Aśoka.[16a] It appears from the literary evidence that ancient Kāśmīra (including the Kashmir Valley) could have been the northernmost province.[17] Vaiśya Pushyagupta was a rāshṭriya or governer of a rāshṭra (province) during the reign of Chandragupta and Yavanarāja Tushāspha was the same under Aśoka in the indentical province, which not only included the area of Girinagara (Girnar in Kathiawad), with which both the governors were connected,[18] but could have also incorporated the whole of area of Gujarat. It could even included parts of Rajasthan (the Jaipur region of which yielded two edicts of Aśoka) and Western Deccan up to Sopara (the place of discovery of fragments of two major rock edicts of Aśoka), However, one may believe that the former was within the administrative limits of Magadha and the latter was a part another province (Aparānta?).

Ujeni or Ujjayinī (modern Ujjain in the Ujjain district of M.P.), the traditional metropolis of Avanti, was the capital of a Maurya province. It should have included at least the western and central Madhya Pradesh to the north of the Narmada (since Gujarat in the Datia district, Panguraria in the Sehore district, Sanchi in the Vidisha district and Rupnath, not very far from Jabalpur, have yielded Aśokan inscriptions). This province could have been known as Avanti, if the *Mahāvaṁsa* correctly recorded that Aśoka had served as a viceroy in Avanti.[19] Kumāra Saṁva (Śāmba), mentioned in the Panguraria edict, might have been for some time the governor of the same province during the reign of Aśoka.

In the eastern coast Kaliṅga must have included the coastal districts of Orissa, two sets of rock edicts having been found at Dhauli (Tosali) in the Puri district and Jaugada (Samāpā) in the Ganjam district. It is interesting to note that Rock Edict XIII, which records the conquest of Kaliṅga, also states in its Shahbazgarhi recension that the Āṭavikas (or the inhabitants of the forests), living in the dominion of Devānaṁpriya and pacified by him, were told "of the power" which he possessed "inspite of repentance", in order that "they may be ashamed [of their crime] and may not be killed". This statement may tempt us to include within the administrative limits of Kaliṅga much of Orissa and eastern Madhya Pradesh (where in the Gupta period there was a kingdom of Mahākāntara or Great forest in the Bastar district area and āṭavika rājya (s) or forest kingdom (s) in parts of Bundelkhand and Baghelkhand, now included in north-eastern Madhya Pradesh).

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In the south the administrative limit of the province of Kaliṅga could have extended up to the Guntur district region. An epigraph attributable to Aśoka has been found at Amaravati of this district.[20] Moreover, during the Maurya age the areas of the West Godavari, Krishna and Guntur districts were not known by any specific name.

The second of the two separate Rock edicts or the Kaliṅga edicts dispells the doubts of unconquered borderers about the King's attitude to them. It states that "the king will forgive them what can be forgiven". This evidence suggests that one or more than one area abutting the province of Kaliṅga was or were under the influence or hegemony of the king, but not in his conquered territory. Was this area or these areas in the Southern Kosala region (Bilaspur-Raipur-Sambalpur tract)?

The areas of the Kurnool, Gulbarga, Raichur, Bellary and Chitradurga districts, the first belonging to Andhra Pradesh and the rest to Karnataka, have yielded Aśokan edicts. They should have belonged to the southern province, whose headquarter was at Suvarṇagiri, (present Maski or Jonnagiri?). The southern boundary of the southern province probably ran roughly along the southern limits of the Prakasam (?), Kurnool, Chitradurga and Shimoga (?) districts and reached the sea on the west.[21] Parts of the southern Deccan, which had already witnessed in the pre-Mauryan times, neolithic, chalcolithic, and megalithic cultures, were perhaps not at the same cultural level as that of Magadha or Gandhāra. But availability of iron and gold (through mining) made this province economically very important.[22] It is not certain whether the Mauryas ever invaded the far south or the Tamil country, as some scholars would like us to believe on the basis of the references in the Sangam poems to the military activities of the Moriyar (= Mauryas) in that region.[23] Even if the Mauryas invaded the far south, the territory, including the lands of the Choḍas (Choḷas), Pāṇḍyas, Satiyaputras (Satyaputras) and Ketalaputras (or Keralaputras), was outside the conquered domain (*vijita*) of Aśoka (RE II and XIII).

Several parts of the upper central Deccan below the Naramada and the Vindhyas (and now included in sections of the south Madhya Pradesh, eastern Maharashtra and western Andhra Pradesh) did not witness the advent of northern Indo-Aryan culture in the pre-Maurya period. Nevertheless, fairly high stages of neolithic and megalithic cultures and workings in metals (like copper and iron) are attested.[24] However, the advent of Indo-Aryan culture in at least certain parts of Central Deccan is suggested, as noted above, by the inclusion of the Aśmaka (Nizamabad and Karimnagar districts and a section of north-eastern Maharashtra) in the list of sixteen great kingdoms of *c.* 6th century B.C., which were in the domain of Brahmanical or at least Indo-Aryan culture. This culture further strengthened in the Maurya period. This is suggested by the discovery of a Buddhist *stūpa* at Dhulikatta, datable to *c.* 3rd century B.C.[25] Of the tribal peoples and septs mentioned in the Major Rock Edict V and XIII, among whom Dhamma was followed, the home of the Aṁdhras

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may be located in Central Deccan[26] and that of the Pāriṁdas or Pāladas or Palidas (= Pulindas?) in the Vindhyan area.[27] We do not know whether the Bhojas, the Pitinikas (or Bhoja-Pitinikas), Nābhakas, Nābhapaṁtis (or Nābhaka-Nābhapaṃtis) and Raṭhika-Pitinikas can also be located in parts of the territory concerned. However, the Bhojas (or Bhoja-Pitinikas) may be reasonably connected with the Vidarbha area.[28] In any case, there were tribal peoples living here (as well as elsewhere), among whom Dhamma had to be preached. They might have enjoyed some sort of autonomy. The Maurya province in upper Central Deccan was perhaps culturally backward, but materially important. It was the homeland of certain autonomous (and turbulent?) peoples.

The Dhamma of Aśoka, the nature of which we shall clarify later, was apparently meant for promulgation throughout the empire and also intended to be preached even outside the empire (R.E. XIII). So we may discern special significance in the references in R.E. XIII to certain peoples (and/or territories) in the empire as conforming to the principles of Dhamma. Among such territories were Yona (Arachosia) and Kamboja (Paropamisadai). The tribes or at least some of them lived in the province incorporating upper Central Deccan. As special effort's were necessary to maintain peace and amity in the areas concerned, the provinces in the north-western frontiers and the upper Central Deccan were areas of tension, though perhaps for different reasons. Takshaśilā, the capital of a province (Gandhāra), was situated on India's route to outer world and was the most important city in the north-western section of the empire. Its people had at least once revolted against the oppressive rule of high officials (*amātyas*) and so it deserved watchful attention to ensure non-recurrence of such a situation.[29] Ujjayinī was the capital of a province through which north India was connected with ports in western Deccan and Gujarat. Kaliṅga, conquered or re-conquered, after a brutal war, deserved sympathetic treatment to soothe the feelings of the inhabitants. Special attention was also required to be paid to the southernmost province, rich in precious metal[29a] and inhabited by Dravidian language speaking people, not accustomed with the north-Indian Indo-Aryan culture.

Thus different provinces required different types of attention from the centre. It appears from the first Separate Rock Edict that Ujjaiyinī and Takshaśilā were in charge royal princes (kumāra). The second Separate Rock Edict at Dhauli (Tosali) suggests that Kaliṅga was ruled by a kumāra with the help of officials of the Mahāmātra class. The Brahmagiri Minor Rock Edict (I) indicates that the southern provinces was ruled by an Āryaputra (indicating a "prince" or the heir-apparent?) with the help of officials of the Mahāmātra class. The western province, with important ports within its jurisdiction, was first governed by a person of the Vaiśya caste, who could have hailed from a trading family. Later the post was given to a Yavana noble man.[30]

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These governors, all of whom did not enjoy an equal status, were apparently under the direct control of the emperor. The latter could interfere in their administration. For an example, the second Separate Rock Edict at Dhauli is addressed by a royal order to the prince (governor) and Mahāmatras of Tosali, while the first Separate Rock Edict at that place and the similar edicts at Jaugada (Samāpā) contain royal orders issued directly to the local Mahāmātras.

C

The emperor was, no doubt, an absolute ruler. But he had his counsellors and ministers. According to tradition, Kauṭilya (Chānakya) was the minister of Chandragupta. However, a more reliable source like the *Indika* of Megasthenes, now known in quotations, indicates the nature of the royal associates.

While quoting Megasthenes Diodorus Siculus (1st century B.C.) states in his *Bibliothekes (H) istorikes* that "the whole multitude of Indians are divided into seven parts" (not castes) [(H) eptamere]. These were philosophers, farmers (most numerous), neat herds and spephards, artisans, military personnel, inspectors and counsellors (or councillors) and assersors (II, 40-41). This passage was also utilized by Strabo and Arrian.[31] Here we have a reference to seven professional parts or sections of the people and not to any hereditary caste system, the term *meros* used here literally meaning "part, share, portion, etc.". Arrian wrongly substituted the term *meros* by *genos*, denoting "race, stock, kin, etc."

It appears from the statements of Diodorus and Strabo that each of the seven sections of the population had some relations with the king. The philosophers (who probably traditionally belonged to the Brāhmaṇa caste) made forecasts for the king. The farmers paid the royal treasury rent on land cultivated by them and one-fourth of the produce. The herdsmen and spepherds cleared areas of menacing beasts by killing them and helped the king to bring more land under cultivation. This was certainly of great help to the administration. According to Strabo, in return of the service they were given allowances in grain from the king's granary. The artisans manufactured implements for cultivation and weapons (necessary for equipping the royal army). They received allowances from the royal exchequer. The military personnel were trained for war and were maintained by the king. The inspectors were "to inquire into and superintend all that goes on in India, and make report to the king, or, where there is no king, to magistrates", who were obviously government servents. The counsellors and assessors included advisers to the king, treasurers of the government, arbiters of disputes, chief magistrates and generals of the army.[32] Hence the leaders of the royal administration, army and judiciary belonged to this class.

Since the above noted system covered "the whole multitude of Indians" (of the whole empire) and reporters were permitted to meet magistrates, where the king was not available,

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it was applicable to Magadha and also to the provinces. Indeed this system was ultimately useful to the king, who could have indeed formed a network through which he might have tried to control the administration of the empire.[33]

Aśoka had a palisā (parishad) or council (of ministers or advisers) (RE III and VI) and was eager to be informed of the affairs of the people and administration at any place and time. For this purpose reporters were posted everywhere (REVI). He directly ordered for various works to be done at the provincial levels (S.R.E. I and II). He used to visit the people and gave them gifts (RE. VIII). He made a special tour of the empire for 256 "nights" (i.e. days) after the relics of the Buddha had been deposited on aplatform (for worship) (Arhaura recension of MRE I). This tour might have commenced after his visit to Sambodhi (Bodh-Gaya) after the completion of his tenth regnal year (RE VIII). During the travel he reached at least up to the Sehore district region. The Panguraria version of MRE I, found there, records a message sent to Kumāra Saṁva (Śāmba) while he was proceeding in the direction of a monastery in Māṇema-deśa. It has been claimed in RE XIV that the king had caused to be written full length, middle and abridged versons of the rescripts on Dhaṃma, since "the whole was not suitable everywhere". These rescripts were ordered to be engraved on stone pillars, rocks and slabs in different parts of the empire so that they could be read by the people or read out to them (P.E. VII, Rupnath and Sahasram recensions of MRE I and SRE I and II).[34]

Strabo, on the authority of Megasthenes, stated that the Agronomoi "keep the rivers improved and the land measured...They make public roads, and at every stadia set up a pillar to indicate byroads and distances"[35]. Eratosthenes (275-194 B.C.), a junior contemporary of Aśoka, referred to a "royal road", which, as indicated by some classical sources, was at least partly identical with the great route running from western Asia to the confines of India and through Taxila and several other places to Palibothra (Pāṭaliputra).[36] This road is mentioned as kārapathi (krpty) (*i.e.* 'military road' or 'lord's way') in two Lamghan edicts of Aśoka, which also served as indicators of distances to different places (from their positions).[37]

Thus the Maurya emperor, an absolute ruler, with a standing army at his command and having similar types of officials (with designatious like Mahāmātra, Rājuka, etc.) posted in different provinces, tried to control the empire as a some sort of a "unitary state". But there were several hindrances to the fulfilment of this objective.

The provinces were perhaps divided into different administrative units and subunits. The references to āhāra, *i.e.* "district", in the Sarnath and Rupnath inscriptions indicate so. The *Arthaśāstra* recommends for the establishment of a sthānīya, a droṇamukha, a kārvatika, a saṁgrahaṇa among (*i.e.* as the headquarters of) 800, 400, 200 and 10 grāmas or villages respectively (II, 1). Apparently a sthānīya (a town or quasi-urban locality) had within its

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jurisdiction the other divisions in the order mentioned here with the grāma or village as the smallest unit of settlement. Even if such divisions were not actually present in the Maurya empire, its smallest unit of settlement should have been the village.

The regional officials could have often been oppressive. According to a legend recorded in the *Divyāvadāna,* oppression by high officials at Taxila resulted in a revolt by the citizens, which situation was successfully tackled by prince Aśoka with the spontaneous consent of the subjects.[38] Justin, accused (probably on the basis of some earlier authority). Chandragupta himself of tyranical rule.[39] The Kaliṅga war must have caused great resentment among the people. Moreover, there were tensions (administrative, social and economic?) in certain provinces of the empire.

Aśoka was in favour of continuation of *porāna pakitī* or "ancient rule" (Brahmagiri, Siddapur and Jatinga-Rameswar versions of MRE I) apparently for maintaining a status quo or peaceful continuation of the old social order and custom in the interest of the political stability of the empire. Such an attitude was unable to iron out local differences or redress long standing popular grievances at the local level. Moreover, the absence of popular participation in local administration should have at least partially alienated the subjects from the sense of a bond with the empire and emperor.

D

Aśoka faced an uphill task. He had to rule over a vast empire plagued by a caste-class ridden socity, social and economic inequalities, rivalries between different religious sects, regional and local differences in culture (spiritual as well as material) and lack of easy communication (by the modern standard).[40] To maintain the peace and toleration in the empire he counselled the people through his despatches (known as *dhammalipi*) meant for their display in public places, and appointed the Mahāmātras and other classes of officials to visit the people to hear and redress their grievances. He himself tried to establish contact with sections of them during his tours (*dharma-yātrā*).

The idea of speaking directly to the subjects through his rescripts on Dhamma and of issuing several versious of the same rescript probably came from a practice followed in the Achaemenid empire. For examples, we can refer to the Behistan (or Bisitun) and Elephantine versions of an inscription of Darius I[41] and to the similarity between the opening section of several Dhammalipis (*Devānaṁpiyo Piyadasi rājā evaṁ āha*) and the initial portion of the Behistan inscription of Darius I (*adam Dārayavauś xśhāyathiya vazraka xśāyathiya xśāyathiyānām...thātiy Dārayavauś xśāyathiya*).[42] However, whereas Darius, as a tyranical despot, bragged to have crushed the rebels and blared out about his might, Aśoka, as a gentle paternal and benevolent despot, exhorted the subjects to live in peace and amity,

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conforming to the ancient rule or tradition (*porānā pakiti*) and declared that all men (*i.e.* his subjects) were his children (*save munise pajā mamā*) (SRE I). By promulgating his Dhamma after the expiry of his tenth regnal year Aśoka wanted to reconcile different sections of the people to one another and to bring the subjects nearer to the king and officials.

A great lot has been written about the content and nature of Aśoka's Dhamma. It has been labelled Buddhistic, humane, socially ethical, moral, politico-moral principles, etc.[43] A critical analysis of the rescripts on Dhamma (called E'usibeia, *i.e.* Piety, in Greek, and Qśyt', *i.e.* Truth, in Aramaic edicts) establishes that it is a political philosophy based on social and religious codes and ancient custom in order to maintain social order, religious harmony, and communal and political peace in the vast empire ruled by a paternal benevolent despot. He declared that his subjects as his children and demanded from them abject submission. The term *dṛiḍhabhatitā* of the Prakrit versions of R.E. VIII and XIII is expressed in its Greek recension as *ta tou Basileōs sumpherontá noein* ("had in mind or to have in mind the king's interests or profits"). This concept of *bhakti* (Devotion) to the government was supported by a Pāṇinian rule.[44]

The socio-political system, as envisaged by Aśoka's Dhamma, had two parties—the subjects and the king. The subjects should be loyal, tolerant and conforming to old social orders. The king, on his part, undertook the responsibility of doing welfare works beneficial to the subjects and assured them of benefit in this world and in the next. Several welfare measures were indeed implemented (or at least claimed to bave been implemented).[44a] The king, however, did not forget to caution that the rebels would be punished since though he was repentant (on account of the tragedy of the Kaliṅga war) he was full of authority. He did not eschew violence, but was in favour of its minimum use.[45]

This brilliant political philosophy, which Aśoka put into practice, apparently aimed at ensuring the integrity of the vast empire under a strong central government. But, as noted above, there were forces favouring disintegration and local autonomy and differences. Even the dhammalipis, as they appear now, were not always despatched from the royal court at Pāṭaliputra. Surely the content of the set of edicts at Sannati, omitteng R.E. XIII and incorporating SRE I and II, must have been communicated to the local officials by an official in Kaliṅga (who forgot even to exclude the separate Rock Edicts meant for Kaliṅga).[46] Moreover, the royal despatches, couched in a local dialect of Prakrit, were changed and revised. Sometimes there were new compositions (as in the cases of Greek and Aramaic edicts) by regional officials to suit the local necessities. There are indeed indications that the provincial officials had discretionary powers in certain respects.[47] Moreover, difficulties in swift implementation of royal orders by forces (even using horses) undermined the concept of controlling the whole empire by a centralised government. So the empire was not as unitary in character as it is made out some times[48] or as it should have been in Kauṭilya's

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dictium. In the third century B.C., as G. Fussman has correctly pointed out, "history and geography precluded the constitution of a unitarian state".[49] The sprawling empire was under a strong central government and army ; but its provinces were plagued by differences of various sorts and local autonomy (in certain areas), which undermined the attempts to impart to it a monolithic character. Nevertheless, Aśoka's brilliant messages, aiming at the imperial, (or practically the Indian) integration, transcends the time to our generation as an inspiring force.[50]

D

Though Aśoka's Dhamma was not the same as Buddhism, he definitely became a Buddhist lay disciple and also took interest in the affairs of the Saṅgha or Buddhist Church (MRE I). He took steps to ensure that the Saṅgha might "last long by remaining intact" (Sanchi Pillar Inscription). He warned the monks and nuns that anybody causing division in the Saṅgha would be caused or forced to wear "white garment" and "to live in another residence" (*i.e.* would be turned out of the Church) (Sarnath, Sanchi, and Allahabad Pillar Inscriptions). For ensuring long duraition of Saddhaṁma (Saddharma or True Religion) Aśoka exhorted monks, nuns, laymen and laywomen to listen and to think about certain expositions on Dhamma (Buddhism), containing the sayings of the Buddha (Bhabru edict).[51] The king visited Buddhist places of pilgrimage like Sambodhi and Lumbinī. The village of Lumbinī (Rummindei in Nepalese Tarai), the birth place of the Buddha, was made "free from land revenue and subject to pay only one-eighth (of the produce as tax)" (RE VIII and the Rummindei Inscription).

Aśoka erected numerous stūpas.[52] He enlarged the stūpa of Konakamano (Kanakamuni) to double its original size (Nigalisagar Inscription).

Aśoka's exertion (*prakama*) for preaching Buddhism began "after entering (*i.e.* become dovoutly attached to) the Saṅgha" (MRE I). His Dhamma-yātā (*i.e.* Dharma-yātrā) or "Tour for preaching Dhamma" began after visiting Sambodhi, where the Buddha had become enlightened (RE VIII). Several features of Aśoka's Dhamma (as distinct from Buddhism) can be traced to a number of Buddhist texts.[53]

According to literary sources, the Third Buddhist Council was held at Pāṭaliputra in the time of Aśoka.[54] At the end of the Council missionaries were sent to different territories.[55] The areas, as noted in the *Mahāvaṁsa,* could have been, excepting two, within the confines of Aśoka's empire. One of the countries of exception was Suvaṇṇabhūmi,[56] *i.e.* Suvarṇabhūmi (identifiable with the zone of Thaton and Pegu on the Gulf of Martaban, Myanmar).[57] This could be reached either by an overland route or by a sea route. We, are, however, not sure about the historicity of this claim. There is, however, no doubt about Aśoka's relation with Laṅkā or Tāmraparṇi. Aśoka despatched (a part of) the Bodhi tree, escorted by

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Mahendra and Saṅghamitrā, to Laṅkā.[58] The ship, carrying it left for its destination from the port of Tāmalitti (Tāmralipti, in the area of Tamluk in the Midnapore district of West Bengal). Since Aśoka witnessed its departure[59] without the presence of any other king (of the area), the zone concerned should have been within his empire. Though Laṅkā might have been familiar with Buddhism even before this incident,[60] the remarkable act by Aśoka helped to foster Buddhism as an international religion.[61]

E

This evidence brings in the wider question of diplomatic relations of the Mauryas with outside powers. A conflict took place between Chaṇdragupta and Seleucus I (312-280 B.C.) of Syria shortly after or rather shortly before 301 B.C.[62] The quarrel is reported by Strabo (*Geographikon,* XV, 2, 9), Appian (*Romaike,* Syrian Wars, XI, 55) and Plutarch (*Parallel Lives, Alexander,* 62). It appears from their statements that Seleucus "crossed the Indus and waged war with Androkottos (Chandragupta), king of the Indians, who dewelt on the bank of that stream, until they came to an understanding with each other and contracted (*i.e.* effected by agreement) connection by marriage" (*Kedos*) (Appian, *op.cit.*, XI, 55). Strabo states that "the area of the Paropomisadai (to the south-east of the Hindu-Kush and in north-east Afghanistan bordering the Indian subcontinent), the land of the Arachotoi to the south of the Paropamisadai (Kandahar area in south-eastern Afghanistan), and the country of the Gedrosoi on the sea-coast and to the south of that of the Arachotoi (in Baluchitan) were ceded by Seleucus to Sandrokottas (Chandragupta), who gave away five hundred elephants in exchange". Strabo also speaks of giving away the territories on the terms of "the right to inter-marriage" (*epigamia*) (*op.cit.*, XV, 2,9). Plutarch, too, mentions about the presentation of five hundred elephants (Alexander, 62).

The Greek satrapies established by alexander to the east of these three territories (*i.e.* in N.W.F.P., Punjab area and Sind) had already been conquered by Chandragupta[63] (though Seleucus ventured into that territory in course of his conflict with Chandragupta). So with the annexation of the above noted satrapies the Maurya empire reached up to the Hindu-Kush, a natural frontier of Indian culture. More important was the "treaty" concluded between the two monarchs. By it "the right of inter-marriage" (or "connection by marriage") between the Greeks and Indians was officially recognised. Such a legal sanction might well have been necessary at least in Aroachosia, where the Indians and people of Hellenic origin lived together.[64] Hence the interantional treaty had a clause catering to the social need of the time. The Mauryas had the credit of concluding the earliest recorded international treaty involving India.[65]

Thus the conflict ended in friendship. Diplomatic relations were established between the Seleucids and the Mauryas. Megasthenes was sent by Seleucus I as his envoy to the court of Chandragupta. According to Arrian, he "dwelt with the satrap of Arachosia,

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Sibyrtios.... and often visited Sandrakottos".[66] Athenaeus (I, 32, 18D) refers to strange drugs sent by Sandrakottios to Seleucus. According to the same author (XIV, 67, 652 F and 653 A), Amitrochates (*i.e.* Bindusāra Amitraghāta (?), the father of Aśoka) requested Antiochus I (280-261 B.C.) to send a quantity of sweet wine, some of figs and "a sophist to teach him to argue". The wine and the figs were despatched as desired, but not the sophist, "since sophists were not markatable commodity among the Greeks". Antiochus I sent Daïmachus of Plataea as an envoy to the court of Bindusāra (?). Ptomey II Philadelphos (283-246 B.C.) of Egypt sent Dionysius as an ambassador to India,[67] probably to the court of Bindusāra or his famous son Aśoka.[68]

The cumulative evidence of RE II and RE XIII of Aśoka claims that medical missions for treatment of human beings and animals had been sent to and conquest of Dhamma had been effected in the Yona (Greek) kingdoms of Aṁtiyoka (Antiochus Theos II of Syria, 261-246 B.C.), Tulamaya (or Turamaya) (Ptolemy II Philadelphos of Egypt, 283-246 B.C.). Aṁtikini (Antigonus of Macedonia, 278-239 B.C.), Maka (or Maga) (Magas of Cyrene, in North Africa, d. 258 or 250 B.C.) and Alikasudara (Alexander of Epirus, 272-255 B.C., or of Corinth, 252-247 B.C., in Greece) and in the countries "downwards" (*nīchaṁ*) (i.e. southern territories) like those of the Choḍas (Choḷas) and Paṁḍiyas (Pāṇḍyas), [and Satiyaputra and Keralaputra, mentioned only in RE II dealing with the medical missions] and Taṁbapaṁnī (Tāmraparṇi or Sri-Lanka under Devānaṁpiya Tissa of Laṅkā, c. 247-207 B.C. or a little earlier?).[69] According to the *Mahāvaṁsa*, Tissa and Aśoka were friends for a long time. Once Tissa sent an embassy with gifts to Aśoka and had himself consecrated for the second time as a king at his friend's request.[70] It is, however, difficult to believe that such medical and Dhamma-vijaya missions could have been effectively sent to countries in Europe or even Africa, though there could have been formal deplomatic and economic relations between them and the Maurya empire. Regular contacts (of cultural and commercial type) were possible with the Seleucid domain, which had a commn border with the Maurya empire till the rise of the Greek kingdom of Bactria in about the middle of the 3rd century B.C. We have no evidence of diplomatic relations of the "newly" founded kingdom of Bactria with Aśoka, though the Mauryan territory had to face the invasion of the Bactrian Greeks in a post-Aśoka period (see below).

The fullest implications of observation of Dhamma (see above), which *inter alia* implied abject submission of the subjects to the emperor (Aśoka), could not have been realised in foreign territories. However, some features of Dhamma, preaching amity and neighbourliness, could have attracted the foreigners. In cases of the kingdoms of the far south, they could have been under the awe inspiring influence of the Maurya emperor, even if not under his direct rule.

Thus the Mauryas had diplomatic contacts at different levels with several countries and Indian kingdoms. In this regard they were among the pioneers in the subcontinent.

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F

The contacts of the Mauryan empire or contemporary India with outside world had also economic aspects. But before appreciating such activities a few words may be said about the Mauryan economy.

As it appears from Megasthenes, quoted by later authors, agriculture was the mainstay of economy of India of the Maurya age.[71] Though "all India" or "the whole of the country" is said to be a royal property,[72] such a claim might have really indicated only the sovereignty of the king over his territory. Nevertheless, there could have been large royal estates,cultivated by farmers paying a rent and also one-fourth of the produce to the king.[73] However, private ownership of land was perhaps conceded on different conditions.[74] The capacity to preserve and to regulate the flow of water, so essential for irrigation, drinking and washing and for uses of various types in the time of draught, is demonstrated by the magnificent dam of Sudarśana Lake (Girnar), built under the order of the Mauryas.[75] The production of crops was normally heavy,[76] though famine occurred occasionally (due to absence of any technical knowledge about preservation of food and / or due to uncommon failure of agricultural production, or for other climatic or creature made or man made reasons).[77] There are data suggesting exploitation of metals (including gold, iron, copper, etc.) and minerals, working in metals and existence of different types of industry and trade.[78] The government officials (Agronomoi), as mentioned above, maintained roads and improved waterways.[79] Ships were built by the government and were let out to sailors and merchants.[80] All these helped the growth of economy, and should have also enriched the treasury by way of taxes. The government official collected and used "to superintend the crafts connected with land,— those of wood-cuttuers, carpenters, workers in brass and miners.[81] There were "city commissioners", looking after "the arts of the handicrafts", controlling "sales and barter", inspecting measures, certifying (by stamping) salable products (including fruits), supervising sale of 'new' and 'old' works of artisans, and collecting one tenth of the price of articles as tax and impoosing penalities on offenders.[81a] Taxes (or tributes) were also realised in the form a part of the produce[82] or in coined money.[82a] The city commissions were jointly responsible to repair and maintain public works, market-places, harbours, etc.[82b]

The above pieces of information, collected mainly from the statements of Megasthenes (as known from later writers), reveals an improved state of economy, controlled by the government for the benefit of the royal treasury. However, there were enough scope for private participation in industry and trade.[83] The same impression is given by the *Arthaśāstra* of Kauṭilya, which also speaks of various types of taxes.[84]

The evidence of direct supervision of mines by Maurya officials,[84a] which obviously included those yielding metallic ores usable for manufacturing of weapons, should have naturally encouraged the administration to find out and excavate new mines.[84b] The neatherds

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and shepherds (of the nomadic tribes living in tents) used to clear the countryside of wild beasts (and forests?) and thereby helped the administration in expanding the area "under cultivation".[85] The same acts should have also facilitated the growth of new settlements. The importance of having new settlements is also indicated in the *Arthaśāstra*.[86] These activities indicate that the Mauryas tried to expand the existing economic and fiscal base of the empire. The foundation of Puṇḍranagara in *c.* 3rd century B.C., as indicated by the recent excavations conducted at its site (Mahasthan, Bogra district, Bangladesh),[87] and the fact that it was in the Maurya domain and on an important route connecting Magadha with an area now in China,[88] demonstrate the intention of the Mauryas to facilitate and protect the trade through this route up to the very last outpost in the eastern part of the empire. Perhaps through this route the Chinese silk (Chīnapaṭṭa) was imported into the empire.[89]

The absence of detailed information on provincial markets do not allow us to be sure of any rigid imperial control over regional or local economy. Nevertheless, it must be noted that a very large number of silver punch-marked coins (*i.e.* paṇas or kārshāpaṇas, or purāṇas), weighing 32 ratis (*i.e.* 57.2 grains) and bearing five well-known "obverse symbols", have been discovered in the greater part of the territory once under the Mauryas and have been perhaps rightly attributed to their mints.[90] Their evidence clearly establishes that daily transactions throughout the greater part of the empire, in which common men also participated, were, to at least a great extent, carried on in coins (even if the sysem of barter was not totally discarded) (see above).

It is never suggested that the majority of the subjects were economically happy. In fact, such a condition was not possible in a caste-class ridden society and over a vast territory plagued by regional and local differences in culture and ways of life. Nevertheless, the above data may indicate inter-regional industrial and trading activities benefitting financially mainly a class of people (rich enterprisers), the ruling class and the royal exchequer. Such a condition was also conducive to the growth of external trade.

Western India and the Deccan could have commercial contacts with the Gulf area (dominated by the Seleucids) and with Egypt (under the Ptolemies). Alexander considered that the territories on the Persian Gulf and nearby islands "would be as prosperous a country as Phoenicia".[91] The Failaka island off Kuwait was occupied by the Seleucid navy.[92] The letter of Seleucus I of 288-87 B.C., detailing his offerings to the temple of Apollo in Didyama, referred to costus (obviously from India).[93] Seleucus (I?) made an attempt to import amomum and nard from India through a sea route.[93a] Antiochus III (220-187 B.C.) took interest in Tylos (Bahrain), where he felt "at home" on his way back from Gerrha. In the latter place he received aromatics from the Erythracan Sea[94] (probably from India on that sea).

Strabo observed that "under the Ptolemies very few ventured to undertake (sea) voyage and to carry on traffic with India."[95] The attempts at voyages could have been under the

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early Ptolemies. Ptolemy III Euergetes (246-221) sent Eudoxus of Cyzicus to India with presents and an Indian sailor, who had come to Egypt. Eudoxus sailed with presents and returned with a cargo of perfumes and precious stones.[96] Ptolamaic Egypt's commercial (?) contacts with Maurya India had begun ; but the early voyages were perilous.[97]

During the period concerned sea voyages were generally followed routes near the coast. The continental route(s), connecting India with western Asia (see above), was (or were) used for overland trade.

India could have supplied to the "west" (including Egypt) ivory, tortoise-shell, pearl, costus, malabathron, pepper, nard, wood, cotton (textile), silk (partly imported and exported?), medicinal substances, (pottery), etc.[98] An Indian black ware (not of the N.B.P. variety) has been claimed to have been found at a level in the Hellenistic fortress at Failaka (F 5), which is datable to c. 300 B.C.[99]

Coins of Cyzicus and Mysia have been picked up on the western coast and those of the Seleucid kings Seleucus I, Antiochus I and Antiochus II have been unearthed at Karur (in Tamilnadu, which was however, outside the Maurya empire).[100] There are indications of the presence of rouletted ware of Mediterranean origin or its imitations in the Brahmagiri area (inside the empire) and also in the Coromondal coast (lying outside the Maurya empire) from *c.* 2nd century B.C.[101] However, the presence of rouletted ware from a level of Early Historic Period (*c.* 350-275 B.C.) at Anuradhapur of Sri Lanka[102] enhances the feasibility of a hypothesis of the import of the Mediterranean pottery into India during the Maurya age.

Agatharchides observed in the second half of the 2nd century B.C. that to the Fortunate Islands (modern Socotra, not very far from Cape Guardafui in north-east Africa) "merchant ships go from everywhere, especially from Potana (Pottolis), which was founded by Alexander near (or on) the Indus".[103] This trend in overseas trade of an area once included in the Maurya empire could well have commenced by at least the late Maurya age. The ships used by the Indians in this trade them could have included (or belonged exclusively to) those made and rented out by the government (see above).

Contacts with Tāmraparṇi or Sri-Lanka have already been mentioned. The Early Historic Period 2 (350-275 B.C.) at Anuradhapura have yielded lapislazuli (from Afghanistan or Pakistan?), carnelian (from Gujarat), rouletted ware (from the Mediterranean world) and Brāhmī inscribed potsherds (found also at a level of Early Historic period 1, which ended by. c. 350 B.C.).[104] Indo-Sri-Lanka commercial contacts should have begun by the Maurya age and was preceded by cultural contacts in the wake of which Brāhmī and Prakrit reached the latter country.[105]

There is a suggestion that certain bronze vessels from Bon Don Ta Phet in Thailand bear affinity in their metallic compositions and workmanship to several Indian vessels

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including a number of them found at the Mauryan strata in the Bhir mound (Taxila).[106] This evidence (if found acceptable) may indicate penetration of Indian influences in the mainland of south-east Asia by the Maurya age. In this area traders of the Maurya empire might have been pioneers. This zone could have been approached by them through a overland (and not necessarily a maritime) route.

G

The Maurya age witnessed not only the expansion in the areas of international trade, but also achievements in other fields. Though no treatise of fundamental science can be precisely dated to the Maurya age, a lot of information on developments in scientific knowledge and their applications in technological fields are suggested by the testimonies of the *Arthaśāstra* and the *Indika* of Megasthenes (as quoted by later authors) and archaeological data. These relate to agriculture, irrigation, medicinal plants, urban developments, architecture, bricks, pottery,mining, metals, workings in metals, metals with alloys, glass, etc. The technological brilliance of the age is reflected in in-depth mining,[107] use of metallic zinc (as evident for the analysis of the metal of a vase from Taxila (Bhir Mound) and datable to *c*. 4th century B.C),[108] and the construction of the magnificent and effective dam of the Sudarśana Lake (mentioned above). Standardisation (*pautava*) of weights (*tulā*), measures (*māna*), space (*deśa*) and time (*kāla*) was recommended by Kauṭilya.[109]

Like Ānvīkshikī, (the logic of investivation or investigating philosophy), the three Vedas (*Ṛik, Yajuḥ* and *Sāma-vedas*) and daṇḍanīti (polity), the art and science of livelihood (vārttā, especially relating to agriculture, animal husbandry and industrial and trading activities) constituted a branch of knowledge (*vidyā*).[110] Again of these, Ānvīkshikī "is like a lamp of (of for) all (types) of knowledge (or science or learning), a means for (completing) all works and the refuge of all *dharmas*".[111]

Celebrated commentator on the grammar (*Ashṭadhyāyī*) of Pāṇini like Vyāḍi and Kātyāyana belonged to this age and Patañjali, who flourished under the Śuṅgas, could have begun his career before the fall of the Mauryas. Some of Prātiśākhyas (designed to preserve Vedic texts correctly) like the *Vājasaneyi Prātiśākhya* of Kātyāyana) may also be dated to the Maurya age. Some of the Dharmasūtras might also have been composed.[112]

Doctrines of different sects (like the Brahmanical sects, Buddhist, Jain, Ājivīka, Lokāyata, Agnostics, etc.) must have been known. Seven expositions on Buddhism, containing sayings of the Buddha, are referred to in the Bhabru edict of Aśoka. According to tradition, Jaina canon was fixed in the age of Chandragupta and the third Buddhist Council was held during the reign of Aśoka.[113]

A good number of stories (*ākhyānas* and *ākhyāyikās*) must have been current.[114] Different forms (thematically) of poetry might have evolved.[115] According to some scholars,

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Piṅgala's *Chhandaḥ-sūtra* belonged to the period under review.[116] The work called *Bhārata* (the original edition of the *Mahābhārata,* consisting of 24000 slokas) was already in existence and the final composition of the *Mahābhārata* probably had commenced.[117]

Excellence was achieved in art in industry (like the one which produced highly polished pottery) and in fine arts. Clay sculptures indicate an indigenous trend of not very great merit. But the artistic products sponsored by the Mauryan court generally reveal a great degree of excellence and many of them betray, according to some scholars, influences from the western direction (Hellenistic and Persian).[118]

The rock-hewn caves of the Barabar and Nagarjuni Hills (Gaya district, Bihar) are examples of Maurya cave architecture.[119] The origin of some of the large stūpas (like the great stūpa at Sanchi) and monasteries (like the Dhamarājikā vihāra at Takshaśilā) can be traced to the age of Aśoka.[120] Excavations at Bhir Mound indicate the plan of a Maurya city.[121] Classical accounts give us an idea of the capital Palibothra (Pāṭaliputra), [122] of which the royal palace has been partly unearthed.[123] The famous Mauryan polish on the pillar, cave walls, etc., appear remarkable even to-day.[124]

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The industrialisation and trading activities, indicated above, however, never prove that the majority of the population were economically in a fairly happy position. Such a situation could not possibly have been created in a traditional economic set up, and that too in a caste-class ridden society in Maurya India. As stated above, the economic benefits of the age were enjoyed by the stronger and richer section of the population, including the ruling class and highly successful commercial enterprisers. Common free men, no doubt, could travel far and wide in search of livelihood (as suggested by the Brahmagiri MRE in lower Deccan engraved in Brāhmī by a person called Chāpaḍa, who engraved the last word in Kharoshṭī and so must have hailed from the north-west,[124a] the then zone of the regular use of that script). Nevertheless, the vast majority of the people, including the poor free men and slaves, were far outside the happy economic circle. The people turned so much fatalist[125] that Aśoka dared to declare, apparenlty for rewarding his subjects in return of their affection (loyalty) to him, that as in cases of his children, so also in the cases of his subjects he desired that "they may be provided with welfare and happiness in this world and *in the other world*" (SRI I).

Though the vast majority of the people were poor, the Maurya administration had, as demonstrated by the above noted data, a strong economic base. This the administration maintained up to at least the reign of Aśoka and also, as shown above, tried to expand. It is wrong to assume that that "its primiary concern was with extracting revenue from

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existing sources, and probably not to the same extent with creating new resource bases".[126] The administration was concerned with both the aspects of economy. But surely the economic programmes were restructured making them more government or administration oriented than ever becore.

The revenue earned by levying taxes on land, agricultural and industrial products and trading articles, and profit gained from mining should have been really considerable. Even if the rate of taxation was righ and heads of Taxes numerous (if the evidence of the *Arthaśāstra* is taken into account), the government machinery was competent enough to realise the dues. The *Mahābhāshya* of Patañjali, which states that "images were made by the Mauryas, longing for gold" (*Mauryairhiraṇyārthibhiḥ archā prakalpitā*), suggests that the Maurya administration was bent upon looking for economic gain from every possible source.

The recovery of a very large number of the silver punch-marked coins datable to the Maurya age indicates that a great volume of money was in circulation. This should suggest brisk economic transactions. There is no real ground for the hypothesis that these punch-marked coins show debasement, and thereby indiacate a considerable pressure on Maurya economy.[127] The gradual debasement of the imperial coinage, up to a reasonable degree, is indeed a sign of the people's acceptance of coins at face value. The circulation of token currency indicates the subjects' faith in the government and does not hint at any pressure on it. The government itself was benefited from the system since it had to use less than the required quantity of pure metal for minting a coin. The *Arthaśāstra* (II, 12, 24) recommends such type of debasement in coinage.

The available sources indicate that the Maurya administration tried to maintain a communication system connecting the capital with rest of the empire. This was vital for holding the country together, but its usability was certainly not up to the modern (or even perhaps up to the then required) standard. The Mauryas also maintained a large army.[128] It not only protected the empire from the outside invasions, but also imposed the will of the ruler on the people. As it clear from RE XIII, Aśoka did not rule out the use of force against his subjects, if necessary.

All these measures and indeed the empire itself had no popular sanction, though certain tribes might have enjoyed some sort of autonomy. The administration was insensitive to popular aspirations. We have already referred to the tendencies for oppressive rule by the Maurya officials and the people's aversion to it. We have also indicated the material and cultural differences between different provinces and between areas at a lower level. Such a situation made the ordinary people least interested in the continuity of the empire.

To contain the centrifugal forces, there was a need for a king of great capability and presonality like Chandragupta or Aśoka. Unfortunately there was none of that calibre among

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the successors of Aśoka. Hence they could not change the cetrifugal forces in the empire, which led to its disintegration. There is, however, no solid evidence suggesting a division of the empire, though there have been speculations on this point.[129] Nevertheless, outside invasions, like those of the early Bactrian Greeks towards the end of the 3rd and/or in the first quarter of the 2nd century B.C.[130] might have also damaged the fabric of the empire.[131]

Such a situation precipetated the opportunistic tendencies among ambitious officials and generals.[132] one of them, Pushyamitra Śuṅga, ultimately ousted the last of the Imperial Mauryas and formally put an end to the empire in *c.* 187 B.C. and so within only half a centruy after the end of the great reign of Aśoka.[133]

The empire itself, however, was the first of its kind in the Indian subcontinent, encompassing the major of it. The names *India* and *Jambudvīpa* began to be applied to the whole of the subcontinent during the Maurya age.[134] The political unification should have encouraged the spread of a pan-Indian culture, the process of which had already begun, though popular regional cultures at different levels of perfection must have been in existence. Prakrit (with its dialects) probably developed as a link language throughout the empire.[135] The punch-marked coinage and the Brāhmī script, the mother of the vast majority of the modern Indian scripts, attained an all-India character during the age concerned. Finally, Aśoka's concept of Dhamma was a brilliant contribution to the development of India's political philosophy.[136]

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2. B. and R. Allchin, *Rise of Civilization in India and Pakistan,* New Delhi, 1983, pp. 33f and 218 ; J. F. Jarrige "Excavations at Mehrgarh : Their Significance for Understanding the Background of the Harappan Civilization", *Harappan Civilization* (edited by G. L. Possehl), 2nd edition, New Delhi, 1993, pp. 79f ; B. N. Mukherjee, *India in World Wisdom,* Calcutta, 1986, p. 3.
3. H. C. Raychaudhuri, *Political History of Ancient India with a Commentary* by B. N. Mukherjee, New Delhi, 1996 (cited later as *PHAI, Commentary*), pp. 50f, 96f, and 100f ; H. C. Raychaudhuri, *Studies in Indian Antiquities,* 2nd edition, 1958, pp. 58f.
4. S. K. Chatterji, "Language and Literature", *Age of the Nandas and Mauryas* (edited by K. A. Nilakanta Sastri), Banaras, 1952, pp. 308f. According to a theory, all "later" Prakrit dialects owe their origin to the ways in which the non-Sanskritic populations of different localities spoke the Sanskrit tongue (*ibid,* p. 340 ; for different views see A.C. Woolner, *Introduction to Prakrit,* 2nd edition, reprint Delhi, 1975, pp. 3-4 ; *Zeitschrift der Deutschen Morgenländischen Gesellschaft,* 1910, vol. LXIV, pp. 103f ; etc.). This type of interaction

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could have begun from the early stage of contacts between the Indo-Aryan speech and regional speeches.

5. The forms of several letters of the Kharoshṭī script presuppose the existence of Brāhmī. The theory of the creation of the Kharoshṭī script in the early Achaemenid age (*i.e.* by the late 6th century B.C.) has been substantiated in a recent writing (see our article in the volume called "Śūnya", to be published shortly).

6. B. N. Mukherjee, *Studies in the Aramaic Edicts of Asoka,* Calcutta, 1984, pp. 32f.

7. *Indian Archaeology, 1973-74-A Review,* p. 4 and pl. IV, nos. A and B ; see also pl. IV, no.c.

8. F. R. Allchin (editor), *The Archaeology of Early Historic South Asia,* Cambridge, 1995, pp. 116-117 and 165.

9. The evidence of Brāhmī in the north-west of the subcontinent at the time of creation of the Kharoshṭī script in *c.* late 6th century B.C. (see above n. 5) is a sure enough proof to negative the hypothesis about mercantile involvement in the rise of the Brāhmī script in Sri-Lanka in *c.* 4th century B.C. and about the "correlation between the growth of trade network in Sri Lanka and the use of recording, first an non-scriptual and then as scriptual graffiti" (R. A. E. Coningham, F. R. Allchin, C. M. Batt and D. Lucy, "Passage to India? Anuradhapura and the Early use of the Brahmi Script", *Cambridge Archaeological Journal,* vol. 6, no. 1, 1996, pp. 73-97, especially p. 92). The earliest meaningful graffiti on pots discovered at Anuradhapura are in Prakriṭ, surely of north Indian origin. Prakrit as well as Brāhmī could have reached Sri-Lanka from eastern Deccan with which the former had contacts at least in the early centuries A.D.

10. PHAI, *Commentary,*New Delhi, 1996 pp. 80. and 682.

10a. Megasthenes described Pandaia as that portion of India which lies to southwards and extends to the sea (Polyaenus, Strateg. I, 3,4 ; A Dahlquist, *Megasthenes and Indian Religion,* Delhi, 1962, p. 67 ; See also Strabo, *Geographikon,* XV,1,11 ; Arrian, *Indike,* III, 7-8 ; B. N. Mukherjee, *Foreign Names of the Indian Subcontinent,* Mysore, 1989. pp. 24-32 ; etc.

11. D. C. Sircar, *Aśokan Studies,* Calcutta, 1979, pp. 132f and p. 138.

12. *Mahāvagga,* I, 20, 7.

13. B. N. Mukherjee *Foreign Names of the Indian Subcontinent,* pp. 2f.

14. Kauṭilya, *Arthaśāstra,* IX, 1.

15. E. W. Seligman (chief editor), *Encyclopaedia of Social Sciences,* vol. V, New York, 1957, p. 497.

16. *Anabasios Alexandrou,* V, 6, 2.

16a. B.Ṇ Mukherjee *Studies in the Aramaic Edicts of Aśoka,* p. 14.

17. Kalhaṇa, *Rājataraṅgiṇī,* I, 17-21.

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18. *Epigraphia Indica,* vol. VIII, p. 43.
19. *Mahāvaṁsa,* XIII, 8-11.
20. D. C. Sircar, *Asokan Studies,* pp. 118f.
21. According to the *Mahāvaṁsa,* Aśoka sent a Buddhist mission to Banavāsī (in the Shimoga district).
22. Alaka Parashar—Sen (editor), *Social and Economic History of Early Deccan—Some Interpretations,* New Delhi, 1993, pp. 74f and 106-107. There are traces of a number of ancient gold working sites in the Raichur district. Were the Mauryas attracted also to the Kolar district area, well-known for its gold depositse? In this connection see also the *Journal of the Economic and Social History of the Orient,* vol. V, 1962, pp. 197f.
23. *Puram,* 175 ; *Aham,* 69, 251 and 281 ; K. A. Nilakanta Sastri (editor), *A Comprehensive History of India,* vol. II, Calcutta, 1957, pp. 501-2.
24. *Ibid.*, pp. 83f and 110-112.
25. *Ibid.*, p. 87.
26. *PHAI, Commentary,* p. 683.
27. S. B. Chaudhury, *Ethnic Settlements in Ancient India,* Calcutta, 1955, p. 149.
28. *PHAI, Commentary,* p. 81.
29. *Divyāvadāna* (edited by P. L. Vaidya, Darbhanga, 1959), ch. 26—*Prāṁśupradānavadāna,* p. 234 ; See also J. Przyluski, *The Legends of the Emperor Aśoka in Indian and Chinese Texts* (translated by D. K. Biswas), Calcutta, 1967, p. 113.

29a. V. Begley, "From Iron Age to Early Historical in South Indian Archaeology", *Studies in Archaeology of India and Pakistan* (edited by J. Jacobson), New Delhi, 1986, pp. 300-301.

30. *Epigraphia Indica,* vol. VIII, p. 43.
31. Strabo, *Geographikon,* XV, I, 39-50 ; Arrian, *Indike,* XI, 1f ; Pliny, *Naturalis Historia,* VI, 22, 66.
32. Diodorus Siculus, *Bibliothekes Historikes,* II, 40-41 ; Strabo, *op. cit.*, XV, 1, 39-50.
33. *PHAI.*, Commentary pp. 600-601.
34. See also *ibid.*, pp. 633-638.
35. Strabo, *op. cit.*, XV, I, 50.
36. Eratosthenes quoted in Strabo, *op.cit.*, XV, 1, 11 and Arrian, *Indike*, III, 1-5 ; Pliny, *op.cit.*, VI, 21, 62-64.
37. B. N. Mukherjee, *Studies in the Aramaic Edicts of Aśoka*, pp. 12, 14 and 16-17.
38. See above n. 29.
39. Justin, *Epitoma Historiarum Philippicarum*, XV, IV.

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40. In this connection see K. A. Nilakanta Sastri (editor), *Age of the Nandas and Mauryas*, pp. 284f and 308f ; *Indian Historical Review*, vol. XIV, pp. 55f ; etc.

41. R. G. Kent, *Old Persian-Grammar, Texts, Lexicon*, New Haven, Connecticut, 1955, p. 116f; J. C. Greenfield and B. Porten, *The Bisitun Inscription of Darius the Great-Aramaic Version*, London, 1982, pp. 22f.

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43. B. M. Barua, *Aśoka and His Inscriptions*, Calcutta, 1946, pp. 225f ; T. W. Rhys-Davids, *Buddhist India*, reprint, Calcutta, 1950, p. 192 ; V. A. Smith, *Aśoka*, Reprint, Delhi, 1957, pp. 30-31 ; E. Hultzsch, *op.cit.*, p. XLIX ; R. G. Basak, *Aśokan Inscriptions*, Calcutta, 1959, p. XXV ; D. R. Bhandarkar, *Aśoka*, 3rd edition, Calcutta, 1955, p. 90 ; D. C. Sircar, *Inscriptions of Aśoka*, 3rd edition, Delhi, 1975, p. 17 ; *PHAI*, *Commentary*, p. 301 ; K. A. N. Shastri (editor), *Age of the Nandas and Mauryas*, p. 234 ; R. Thapar, *Aśoka and the Decline of the Mauryas*, Oxford, 1961, p. 181 ; etc. For different views see B. N. Mukherjee, *Studies in the Aramaic Edicts of Aśoka*, pp. 60-61.

44. *Ashṭadhyāyī*. IV, 3, 100 as it is read with IV, 2, 124 and 125.

44a. Among these were provisions made for medical treatment of human beings and animals, importing and planting of beneficial (medicinal) herbs in localities where they had not existed before, planting of banyan trees for providing shade to beasts and men, planting of mango-groves, digging up of wells at an interval of half a (or eight) Krośa (or krośas), causing of construction of sale-stalls, etc. (RE II and PE VII). Prisoners, sentenced to death, were ordered to be given a respite of three days to enable their relatives to appeal to a class of officials (Rajjukas) to save their lives (P. E. IV). Aśoka also advocated non-violence and followed a definite policy in imposing gradually the regulations for a general prohibition from killing certain types of animals and fishes (See B. N. Mukherjee, *Studies in the Aramaic Edicts of Aśoka*, p. 59).

45. B. N. Mukherjee, *Studies in the Aramaic Edicts of Aśoka*, pp. 53f.

46. *Indian Historical Review* (Later *IHR*), vol. XIV, pl. facing p. 36. Here edict XIV follows edicts XII.

47. B. N. Mukherjee, *Studies in the Aramaic Edicts of Aśoka*,, p. 64.

48. B. M. Barua, *Aśoka and his Inscriptions*, pp. 146 and 153 ; R. Thapar, *Asoka and the Decline of the Mauryas*, 2nd edition, New Delhi, 1997, pp. 94f ; J. Hermann and E. Zürcher. (editors), *History of Humanity*, vol. III, London, 1996, p. 365 ; etc. See also G. M. Bongard-Levin, *Mauryan India*. Delhi, 1985, p. 28 258. G. M. Bongard Levin has significantly observed that "the Mauryan empire included regions where traditional political institutions still functioned and in some regions there even existed forms of rule antagonistic to autocratic rule (non-monarchical formations)" (p. 258). The latter feature could have been prevalent among some of the tribal people of the empire.

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49. *IHR*, vol. XIV, p. 72.

50. See above n. 45.

51. E. Hultzsch, *op. cit.*, p. 172 ; B. N. Mukherjee, *Genesis of Buddhism—Its Social Content*, Calcutta, 1976, pp. 47f.

52. There is a story in the *Divyāvadāna* (edited by E. B. Cowell and R. A. Neil, Cambridge, 1886, XXVI, p. 381) that Aśoka wished to build 84000 stūpas. A Taxila inscription of *c.* 1st century A.D. mentions the famous Dharmarājikā monastery (at Takshaśilā) as belonging to Aśoka (*i.e.* caused to be built by Aśoka) (*Journal of the Epigraphical Society of India*, vol. XVI, pp. 30-31). Hsüan-tsang referred in his *Ta-T'ang Hsi-yü-chi* to a great number of stūpas traditionally attributed to Aśoka.

53. D. R. Bhandarkar, "Aśoka and his Successors", *A Comprehensive History of India*, vol. II (edited by K. A. N. Sastri), p. 35.

54. *Mahāvaṁsa,* V, 275-281.

55. *Ibid.*, XII, 1f.

56. *Ibid.*, XII, 44f.

57. R. C. Majumdar, *Hindu Colonies in the Far East,* Calcutta, 1944, p. 191.

58. *Mahāvaṁsa,* XIX, 1f.

59. *Ibid.*, XIX, 6.

60. Buddhism might have been known in Laṅkā during the reign of Pāṇḍukābhaya (c. 377-307 B.C.) (*ibid.*, X, 102).

61. If the modern border between Nepal and India is taken into account, the Buddha, who was born at Lumbinī (now in Nepal) and preached in India, made his doctrine international since it was promulgated. But Lumbinī could well have been in Aśoka's empire and within the limits of India during the Maurya age.

62. *PHAI*, *Commentary,* p. 593.

63. *Ibid.*, p. 592-93.

64. B. N. Mukherjee, *Studies in the Aramaic Edicts of Asoka,* pp. 52, 66, n. 101.

65. *PHAI*, *Commentary,* pp. 594-95.

66. *Anabasios Alexandrou*, V, 6,2.

67. Pliny, *op. cit.*, VI, 589.

68. In this connection E. J. Rapson, (editor), *The Cambridge History of India*, vol. I, Cambridge, 1922, pp. 432-347.

69. *Mahāvaṁsa* (edited by W. Geiger, reprint, Colombo, 1950), p.XXXVII. But since Aśoka (*c.* 273-236 B.C.) was a friend to Tissa "for a long time" (n. 70), the latter should have commenced his reign earlier than *c.* 247 B.C.

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70. *Mahāvaṁsa*, XI, 18-19 and 40-41.
71. Diodorus Siculus, *Bibliothekes Historikes*, II, 40 ; Strabo, *op. cit.*, XV, 1,40.
72. *Ibid.*
73. *Ibid.*
74. This is indicated by the *Arthaśāstra*, II, 1,2 and 24 ; III, 7.
75. *Epigraphiā Indica,* vol. VIII, p. 43.
76. See above n. 71.
77. This is suggested by the Jaina story about a great famine in the days of Chandragupta and the Mahasthan inscription speaking of certain measures to be taken for the time of emergency.
78. Strabo, *op. cit.* XV, 1, 46. See also the *Arthaśāstra*, II, 6. There are pieces of archaeological evidence of working of mines and of a high degree of metallurgical technology in Maurya India (A. K. Biswas and S. Biswas, *Minerals and Metals in Ancient India,* vol. I, New Delhi, 1996, pp. 256f ; *Age of the Nandas and Mauryas,* p. 95).
79. Strabo, *op. cit.*, XV, 1, 50 ; See also the *Arthaśāstra*, VII, 12.
80. Strabo, *op. cit.*, XV, 1, 46 ; *Arthaśāstra*, II, 28.
81. Strabo, *op. cit.*, XV, 1, 50.

81a. Ibid, XV, 1, 51.

82. Arrian, *Indike*, VIII, 11-12 ; Strabo, *op. cit.*, XV, 1, 41 and 51. The farmers paid "a fourth part of the produce" (Strabo, *op. cit.*, XV, 1, 41).

82a. There were officials who used to "collect a tenth part of the price of the things sold" (Strabo, *op. cit.*, XV, 1, 51). The *Arthaśāstra* also indicates collection of taxes in coins (paṇas).

82b. Strabo, *op. cit.*, XV, 1, 51. See also the Lamghan edicts.

83. Strabo *op. cit.*, XV, 1, 46 and 51.
84. *Arthaśāstra*, I, 13 ; II, 6, 14 and 26 ; IV, 2 ; etc.

84a. Strabo, *op. cit.*, XV, I, 50.

84b. See also the *Arthaśāstra*, V, 1 ; VII, 14.

85. Megasthenes quoted in Diodorus Siculus, *op. cit.*, II, 40f. and Strabo, *op. cit.*, XV, 1, 41.
86. *Arthaśāstra*, I, 22.
87. The French archaeologists, who recently conducted excavations at Mahasthan, did not find the existence of any settlement below the 3rd century level (as communicated in a lecture by J. F. Salles at the Third International Congress on Bengal Art held in Bangladesh in February, 1999. See also the *Journal of Bengal art*, no. 3, 1998, p. 193). So Puṇḍranagara was founded in the Maurya age near the eastern border of the empire probably as a trading station and a garrison town. It gradually developed into a city.

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88. The *Divyāvadāna* includes the city of Puṇḍravardhana in the Maurya empire (edited by E. B. Cowell and R.A. Neil, XXVIII, pp. 426-427). It was on the Tsang-ko route, connecting Assam with Yunnan, which was in existence in *c*. 3rd or even 2nd century A.D. (B. N. Mukherjee, *External Trade of Early North-Eastern India*, New Delhi, 1992, p. 22). It could have been in use even earlier. There are indications of contacts between eastern India and China in prehistoric times (A. Datta, *Neolithic Culture in West Bengal*, New Delhi, 1993, p. 132).

89. *Arthaśāstra*, II, 11.

90. P. C. Gupta and T. R. Hardaker, *Ancient Indian Silver Punch-marked Coins of the Magadha-Maurya Kārshapaṇa Series*. Nasik, 1985, pp. 3-4, 31 and 39f. ; B. N. Mukherjee, *Ṭākākaḍi* (in Bengali), Calcutta 1991, pp. 52-54.

91. Arrian, *Anabasios Alexandrou*, VII, 19, 5.

92. J. F. Salles, "Hellenistic Seafaring in the Indian Ocean", *Tradition and Archaeology, Early Maritime Contacts in the Indian Ocean,* edited by G. Salles and H. Ray, New Delhi, 1996 (cited below as *TA*), p. 302.

93. A Kuhrt and S. Sherwin-White (editors), *Hellenism in the East,* London, 1987, p. 90 ; See also the *Periplous Tes Erythras Thalasses,* sec. 49.

93a. Pliny, *op. cit.*, XVI, 59, 135-136.

94. Polybius, XIII, 9, 5 ; *TA*, pp. 302-307.

95. Strabo, *op. cit.*, II, 5, 12.

96. *Ibid.*, II, 3, 4.

97. *Ibid.*,

98. M. Rostovtzeff, *The Social and Economic History of the Hellenistic World,* vol. I, Oxford, 1941, pp. 386-387 ; F. W. Wallbank and others (editors), *The Cambridge Ancient History,* vol. VII, 2nd edition, Cambridge, 1989, pp. 139f ; S. A. Cook and others (editors), *The Cambridge Ancient History,* vol. VII, 2nd impression, Cambridge p. 134. M. Rostovtzeff observed that "the Seleucids ensured steady supply of [Indian] war elephants and India wares" (*op. cit.*, p. 459). *The Periplous tes Erythras Thalasses* of *c*. 1st century A.D. also indicates what could have been the nature of export to these centuries earlier. See also below n. 101.

99. J. F. Salles, "The Periplus of the Erythrean Sea and the Arab-Persian Gulf", *Athens, Aden, Arikamedu,* edited by M. F. Boussace and J. F. Salles, Delhi, 1995, p. 187.

100. M. Mitchiner, *Coin Circulation in Southernmost India*, Nasik, 1995, p. 84. Information about the Greek coins found on the western coast was received from Dr. P. Berghaus.

101. *Ancient India*, no 4, p. 237 and pl. CXI ; V. Begley "From Iron Age to Early Historical Presence in South Indian Archaeology", *Studies in the Archaeology of India and Pakistan*

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(edited by J. Jacobson), New Delhi, 1986, pp. 301 and 317 ; "Ceramic Evidence for Pre-Periplus Trade on the Indian Ocean", *Rome and India-The Ancient Sea Route* (edited by V. Begley and R. D. de Puma), Delhi, 1991, p. 188. Sherds of rouletted dishes, earlier dated to "lowest" Andhra level (*Ancient India,* no. 4, p. 237), are now placed in the 2nd century B.C. or rather in the Maurya age (p. 301 of the first article of Begley).

102. F. R. Allchin, (editor), *op. cit.*, p. 167.

103. Agatharchides, *Peri tes Erythras Thalasses,* quoted in Diodorus Siculus, *op. cit.*, III, 47 ; C. Müller, *Geographicae Graeci Minoris* vol. I, p. 190. Agatharchides also stated that "in these islands you can see merchant ships, most of which have come from the harbour founded by Alexander near (or on) the Indus, also quite a few from Persia, and Carmania and neighbouring regions" (C. Müller, *op. cit.*, vol. I, p. 191).

104. F. R. Allchin (editor), *op. cit.*, pp. 165-169.

105. This is the most convincing explanation of the appearance of Brāhmī as well as Prakrit in Sri-Lanka by *c.* 350 B.C. Before that both of them were well known in India (see above).

106. Ian C. Glover, "Recent Archaeological Evidencce of Early Maritime Contacts Between India and South-East Asia", *TA*, pp. 140-141.

107. A. K. Biswas, *op. cit.*, p. 331.

108. *Ibid.*, p. 353.

109. *Arthaśāstra,* II, 19.

110. *Ibid.*, I, 2.

111. *Ibid.*, I, 2, 1.

112. K. A. N. Sastri, (editor), *Age of the Nandas and Mauryas,* p. 353.

113. *Ibid.*, pp. 97 and 301.

114. *Ibid.*, pp. 330-331 ; *Mahābhāshya*, IV, 2,60 ; IV, 3, 37-8.

115. K. A. N. Sastri (editor), *Age of the Nandas and Mauryas,* p. 371.

116. *Ibid.* See also R. C. Majumdar (editor), *The Vedic Age,* London, 1952, p 478.

117. Pāṇini, *Ashṭādhyāyī*, VI, 2, 38 ; V. S. Agrawala, *India as Known to Pāṇini*, Lucknow, 1953, p. 34.

118. N. R. Ray, "Mauryan Ari", *Age of the Nandas and Mauryas* (edited by K. A. N. Sastri), pp. 361f. Some of the clay figures wear foreign dress.

119. S. K. Saraswati, "Architecture", *The Age of Imperial Unity* (edited by R. C. Majumdar), Bombay, 1951, p. 495.

120. *Ibid.*, p. 488 ; J. Marshall, *Taxila*, vol. I, Cambridge, 1951, pp 87f.

121. *Taxila*, vol. I, pp. 230f. ; *Journal of the Epigraphical Society of India,* vol. XIV, 1990, pp. 32f.

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122. K. A. N. Sastri (editor), *Age of the Nandas and Mauryas*, p. 118.

123. *Ibid.*, p. 346.

124. *Ibid.*, p. 361.

124a. E. Hultzsch, *op. cit.*, pl. 177. The same person seems to have engraved the last word in two other recensions of MRE in Kharoshṭi (pls. 179 and 181).

The Copper dowell (62.5 cms in length and 34 to 28 cms in girth), used once for connecting an Aśokan pillar with its abacus at Rampurva (Bihar) and now kept in the Indian Museum, Calcutta (no. 2676), bears a few figures and the inscription *thabhe* in Kharoshṭī and *thamo* in Brāhmī punched on it. Ovbiously these were punched in a Brāhmī using area in the east by a person from the Kharoshṭī using zone in the north-west.

125. Sukumari Bhattacharji, *Fatalism in Ancient India,* Calcutta, 1995, pp. 292f.

126. R. Thapar, *The Mauryas Revisited*, Calcutta, 1987, p. 29.

127. D. D. Kosambi, *Introduction to the Study of Indian History*, p. 211.

128. Plutarch, *Parallel Lives,* Alexander, 62, "Androkottos (Chandragupta) subdued whole of India with an army of 600,000 men".

129. For an example, see R. Thapar, *Aśoka and the Decline of the Maurya*, p. 194.

130. B. N. Mukherjee, *PHAI, Commentary*, p. 651.

131. We do not know whether Sophagasenus (Subhāgasena) mentioned by Polybius as "the king of the Indians" and as the one with whom the Seleucid king Atiochus III Magnus "renewed his friendship" in *c.* 206 B.C. was a local ruler of an area on which the Mauryan control had been lost.

132. *PHAI*, *Commentary*, p. 321.

133. *Ibid.,* pp. 325 and 336.

134. B. N. Mukherjee, *Foreign Names of the Indian Subcontinent,* pp. 2 and 24f.

135. There is an indication that Aśoka and his officials wanted the Yonas and Kambojas to follow a mumber of instructions quoted in the original language from certain Prakrit edicts in an otherwise Aramaic edict found at Pul-i-Darunta in eastern Afghanistan (B. N. Mukherjee, *Studies in the Aramaic Records of Asoka,* pp. 31 and 50). Is this evidence an indication of an imperial attempt to spread Prakrit, the court language of the Mauryas, among the people not conversant with it?

136. *Ibid.*, pp. 53f.

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THE MAURYAN EXTENSION OF CULTURAL INFLUENCE IN SRI LANKA AS REVEALED BY ARCHAEOLOGICAL EVIDENCE

LEELANANDA PREMATILLEKE

As the learned world is aware, it would not be far from truth to say that, next to the Indian sub-continent, Sri Lanka could be reckoned as the one nation that benefitted most from the cultural missions of Aśoka, that has made an indelible stamp on the island's culture. Amidst all other influences, economic, political and others it is the aspect of religio-cultural activities of Aśoka that has contributed its lot to mould and sustain the characteristic life style of the people of Sri Lanka to this day. Only an outline of such influence as revealed from historical and archaeological evidence, would be placed before you within this short time.

The extension of Mauryan influence to Sri Lanka is best illustrated by the dissemination of Buddhist culture as amply recorded in the chronicle Mahavamsa and the material evidence revealed by Archaeology. The Mahawamsa, the great chronicle of Sri Lanka, records that Emperor Aśoka, in the course of his sending religious missions to various parts of India and adjacent countries, selected his own son Thera Mahinda to lead the mission to Sri Lanka. Similarly, the Emperor's daughter, Sanghamitra was sent to Sri Lanka along with a shoot of the bodhi (Ficus Religiosa), the Tree of Enlightenment of the Buddha at Bodhgaya. The two religious emissaries were responsible for the establishment of the monk's order (Bhikku-sasana) and the order of nuns (Bhikkkuni-sasana). These two constitute the greatest events that were responsible for the development of a cultural and religious heritage that has come to stay in the island. The conversion of the contemporary king of Sri Lanka, Tissa by name, did exert such significant influence that ever since the Sinhala monarchy for over 2000 years of Sri Lanka's history, remained Buddhist, and Buddhism remains a state religion to this day. The very fact that the epithet "Devanampiya" (Beloved of Gods), prefixed to the Mauryan emperor in his numerous inscriptions, came to be adopted by Sinhala ruler himself (hence Devanampiya-Tissa) would testify to the immense impact that Aśoka had had on his Sri Lankan contemporary.

Consequent to the establishment of the orders of monks and nuns, monasteries came to be established in Anuradhapura, Mihintale or Cetiyagiri (where Thera Mahinda met the

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Sinhala ruler Tissa), and other parts of the island. The monastery Tissarama, named after King Tissa, formed the nucleus of Buddhist monastic establishments to follow.

There is no doubt that the Sri Lankan Buddhism which follows the original form known as Theravada or Hinayana, followed the order of nomastic establishments that were in vogue at the time in India, the history of which goes back to the life time of the Buddha. The life history of the Buddha reveals two contrasting lifeways, *i.e.*, (a) the city dwelling order (*eg.* Jetawanarama, Veluvanarama, Ghoshtarama, etc.,) and (b) The forest dwelling order (vanavasi). As the Mahavamsa and archaeological evidence indicate, these two systems appear to have commenced in the 3rd century BC itself. It is recorded that Thera Mahinda adopted his life style accordingly when he dwelt himself in the forest caves of Mihintale (Cetiyagiri), while at the capital city of Anuradhapura, he dwelt in a monastery built by the king. These lifeways apparently gave rise to the gamavasi (city-dwelling sect) given themselves to literary pursuits and the vanavasi (forest dwelling sect) who engaged themselves in meditation (Vidarsana-dhura)

The original monasteries of the city dweller monks who established the gantha-dhura or the literacy sect, appear to have had their dwellings (kuti, parivena etc.) and other amenities like refectories and baths making the stupa or cetiya as its sacred nucleus (*eg.*, Mahavihara, Abhayagiri and Jetavanarama). The history of the construction of a stupa goes back to the time of Thera Mahinda himself (*i.e.*, 3rd century BC) and the first such edifice to be built by Devanampiya Tissa at the instance of Thera Mahinda was the Thuparama. As the Mahavamsa story relates, the stupa was built of dried clay removed from the Abhayavapi in the shape of a heap of paddy (Dhanyakakara). But the Thuparama as we see today has undergone several changes in subsequent centuries even upto the 19th century and now it assumes the shape of a bell (ghantakars).

Speaking of the architecture of the stupa itself, the simple form, as exemplified by the Sanchi stupas of the 2nd century BC, which no doubt were post-designs of the earlier Mauryan stupa types consisting of a berm plinth, hemispherical dome and super structure formed of a railing enclosure and one or more umbrellas (chatra) supported on a shaft (yasti). Although the stupas of Anuradhapura, Polinnaruwa and other sites indicate a developed design, especially in the superstructure, yet we possess Sri Lankan archaeological evidences to indicate the prevalence of the same architectural pattern following Maurya-Sunga design.

The Mahavamsa story of the building of the Mahathupa (ht. 250 ft.) just a century after the reign of Devanampiya Tissa, the contemporary of Aśoka, and almost contemporaneous with the Sunga age to which period the present stupas of Sanchi are dated, relates the construction of the Stupa surmounted by a Chatra, as in the case of Sanchi stupas. The prevalence of this practice is further corroborated by a few gold reliquaries discovered from Cetiyagiri, Dalivala, Abhayagiri, Lahugala, etc. The reliquaries constitute stupas in miniature

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form and the building of stupas with 'Chatra' super structure provide obvious archaeological evidence to indicate the extent of influence exerted by Maurya and Sunga times in the construction of Sri Lankan stupas.

The tradition of stupa construction thus established reached its highest development by the present remains of the Mahathupa (Ratnamali-ceriya), Abhayagiri, and Jetawana stupas, which remain the third, fourth and fifth tallest ancient structures next to the Pyramids of Egypt.

The additional embellishments of the great stupas such as the 'ayaka' (sinh. vahalkada) with their structural ornamentation, in some way or other, bear evidence of the Indian influence from the Mauryan age, for instance, the four animals-elephant, bull, horse and lion—which appear individually in the Aśokan columns (Sankasya-elephant, Rampurva-Bull, Basar-Bakirah and Laurya-Nandangrah-lion) and all four animals together on the abacus of Saranath, appear to continue the same tradition of depicting directional animals at the four ayakas erected for the stupas at the cardinal points. (*eg.* Kantaka-cetiya). The same tradition seems to have continued in the portrayal of the four animals in the moonstones, following one after the other as at Saranath.

Yet another architectural feature in the development of stupa is the circular caitya shrine (Sinh. Vatadage), enclosing the stupa of smaller dimensions within a covered shrine. This feature too is seen at the Thuparama mentioned above. The beginnings of such a design is also noticeable in the structural circular caitya-shrine of Bairat, which authorities attribute to about the Maurya age. To the same age belong the proto-types of caitya-hall architecture, the examples of which are located in the barabar hill *eg.* Sudama and Lomosarishi caves. While the Barabar design soon developed into the well known Caitya-hall architecture of Western Ghats (*eg.* Bhaja, Bedsa, nasik Aurabgabad, and Ajantha), the cricular caitya design of Bairat developed into a splendid architectural design in Sri Lanka as exemplified by such edifices at Thuparama (Anuradhapura), Tiriyay, Mandalagiri (Sinh. Madirigiri) and Polonnaruwa.

The worship of the Bodhi tree, together with its architectural plan is yet another aspect that shows definite archaeological evidences of the influence exerted by Mauryan contact in Sri Lanka. The Bodhi sapling brought by Aśoka's daughter, Sanghamitra was planted with great rituals in the Mahamegha park in Anuradhapura. Ever since the veneration of the Bodhi tree, symbolic of Buddha's Enlightenment, has remained the foremost from of Buddhist worship. The Mahavamsa evidence indicates the installation of the Vajrasana seat under the Bodhi tree, providing indicates the installation of the Vajrasana seat under the Bodhi tree, providing indubitable stamp of the sacred tree as an object of great veneration. Today the Bodhi-puja remains a significant ritual of Sri Lankan Buddhists aspiring for social and personal wellbeing.

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In order to maintain the unity and purity of the community life of the Sangha, the Buddha is said to have held fortnightly forums (uposatha) for the rehearsal of the code of conduct (vinaya) as enunciated in the Patimokkba-Vinaya. Apparently, this tradition was responsible for the holding of the three great council (Sanghayana) as recorded in the Mahavamsa. The first Council was held soon after the demise of the Buddha, the second 100 years after and the third during the reign of Emperor Aśoka. Hence, there is not doubt that the age-old tradition of holding uposatha ceremonies came into being soon after the establishment of Buddhism by Thera Mahinda. From a simple terrace (malaka) with definite boundaries set up for this ecclesiastical function, there commenced an architectural plan several stories high as exemplified by the Lohapasada of the 2nd century BC (9 storeys high) and anuradhapura Ratnapasada of the 8th century and the Polonnaruwa Buddhasima-pasada of the 12th century. The chapter house of Polonnatuwa epitomizes the grandeose achievement of uposatha ceremonies beginning in the 3rd century BC has come to stay upto present times.

The Buddhist sculptural tradition established in Sri Lanka indicate the similar influence exerted by Mauryan contact as indicated above in the case of displaying directional animals. Similarly, the symbolic representation of the Buddha prior to the appearence of the iconic form seems to have continued in the Andhrapradesh as well as in Sri Lanka, even after the introduction of the Buddha image. Examples of stone-carved foot prints (Sripada), Vajrasanas, etc. have been discovered from ancient sites in Anuradhapura, Mihintale, Tissamaharama (in south Sri Lanka), etc.

The Mahavamsa tradition asserts that the Buddha image was known to have existed in Sri Lanka as far back as the 3rd century BC. Similar traditions in India too are recorded in such texts as the Divyavadana. In the 2nd century BC King Dutthagamani enshrined a golden image of the Buddha in the relic chamber of the Mahathupa. The accepted tradition, however, is that the image of the Buddha was not known in India in pre-christian times, only the aniconic symbols being in vogue instead. However, the Mauryan contribution to the great tradition of the worship of the Buddha could well be reckoned by the impetus given to the development of Buddhist faith from the time of its introduction to the island in the 3rd century BC. The inspiration the the Sri Lankan artists were imbued with, enabled them to create a completely natural approach to the depiction of the sublime qualities of the great sage "transforming the continental impulse into a smooth and harmonious expression of its own" as commented by an authority on Indian art (Heurich Zimmer, Art of Indian Asia)

The Brahmi script, also popularly known as Aśoka script, occurs in Lalitavistara at the head of a list of different systems of writing prevalent in ancient India. The early Brahmi writing of the 3rd - 2nd century BC appear in numerous cave inscriptions, too, bear testimony

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to the influence exerted by the religious missionary activities of Emperor Aśoka. The study of Sri Lankan scholars (*eg.* Senarath Paranavitana, P E E Fernando, Saddhamangala Karunaratne) have amply illustrated the evolution of the present Sinhala script from ancient Brahmi through the ages. The existence of rock inscriptions right through the centuries has enabled this study quite feasible. It would suffice here to quote Senarath Paranavitana, Sri Lanka's doyen of Epigraphy and archaeology on the introduction of the script to Sri Landa.

> "Stone inscriptions first appear in Ceylon very soon after the introduction of Buddhism and their contacts are Buddhistic. From this, it is possible that the earliest inscriptions of Ceylon were introduced by Buddhist missionaries, who came to this island in the time of Asoka. It may be fallacious to conclude, from the occurrence of some types of letters in ceylon Brahmi not found in Asokan edicts that the script was introduced before the time of Asoka, for it cannot be maintained that the records of Asoka, hither discovered, have given all the varieties of the script that were in vogue in his day. On the other hand, it is an admitted fact that the Brahmi alphabet had several centuries of development behind it in the time of Asoka. It is also admitted that, whatever its origin, was at first in use among merchant guilds before it was adopted and perfected by grammarians and literary men. We have demonstrated that hundreds of Indo-Aryan culture that were introduced to Ceylon, and their settlement by a people of Indo-Ceylon speech, were due to the enterprise of merchant adventures. It is quite probable that the leaders of those merchant adventurers were literate, and therefore, the art of wirting was practised in Ceylon before the advent of Buddhist missionaries in the time of Asoka."
>
> (Inscriptions of Ceylon Vol. I Early Brahmi Inscriptions P. XXIII para 1)

The chronicle Mahavamsa in its account of the city of the Anuradhapura by Pandukabhaya in the 4th century BC reveals that a trading guild of yonas was established at the northern gateway of the city. These were probably of west Asiatic origin and this reference goes to qualify the statement made above by Paranavitana.

Finally, the most recent excavations conducted by S U Deraniyagala at the citadel of Anuradhapura in 1969 and 1984-89, have revealed much evidence in establishing absolute dating for the existence of the use of Brahmi script at least three centuries earlier in Sri Lanka, which corroborate Paranavitana's postulations state above.

These excavations are also of significance for the study of the contacts with Mauryan India that Sri Lanka enjoyed in the economic and social setting. The 500-250 BC Lower Historic and 250 BC-100 AD middle early Historic phases exposed by the excavations have thrown considerable light on the existence of traders common to both India and Sri Lanka. *eg.*, NBP wares, diminished early Iron age ceramic traits, punch-marked coins, beads

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and glass, bone 'styli', roof tile types, burnt bricks and the potsherds with pre Mauryan Brahmi script discovered here corroborate similar finds discovered from Nasik (400-200 BC), Broach (300-100 BC) and such other sites. The C14 and TL dating for potsherds with Brahmi script have been averaged to about 600 BC (S U Deraniyagala, Prehistory of Ceylon vol. II Addendum II). A number of ceramics of West Asiatic origin from these levels would indicate plausible travel contacts that Sri Lanka maintained at such early periods either directly or through Mauryan contact during which period India had maintained a steady political trade and cultural connections with the Hellenistic world.

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NEW EVIDENCES OF MAURYAN RULE IN SOUTH INDIA AND ŚRĪLANKA'S BUDDHISM : SPREAD AND INTEGRATION

I. K. SARMA

The discovery of Aśokan inscriptions—Major Edicts XII and XIV and Special Edicts I and II at Sannati on a unique granite stone stele evoked great excitement and interest among the scholars of south Indian history[1]. These edicts do not fall under the well known category of Major, Minor, Pillar or Separate Edicts issued by the Mauryan King, Aśoka but happened to be a unique type by itself[2]. M.C. Joshi is nearer the truth when he spelt out "the area of Sannati was included in the Mauryan *Vijita* almost around the same time, when he conquered the Kalingas, perhaps after defeating rulers of Sannati as well". In all probability, like Dhāṇyakaṭaka (Amarāvatī) in coastal Andhra, the areas of north Karṇāṭaka formed part of the Mauryan empire, even perhaps during the pre-Mauryan periods and religiously swayed by the early spread of Jainism[3]. Nanda-Maurya conflicts in the South need not be taken any more as mere literary conjectures. It was precisely this factor perhaps that made Aśoka, the most powerful ruler of the Mauryan dynasty, to annex the area into his empire[4], *(antaḥ* or *iha Rāja Viṣhaya)* and close the northern borders of Karṇāṭaka, caused several Rock Edicts, amplifying the spread of *dharma,* (Nittur and Udegolam, in dt. Bellāri ; Brahmagiri, Siddapur and Jatinga Rāmeśvara in dt. Chitradurga ; Maski, Gavimath and Palkigundu in dt. Raichur). In this political scenario, Aśoka soon after the Kalinga war, perhaps, made a dent and annexed parts of north Karṇāṭaka and firmly established Buddhism.

What is highly interesting is, in recent months a small scale excavation at this very place in a spot called *Raṇamaṇḍala* (site-2) by K.P. Poonacha of Bangalore Circle of the A.S.I. resulted in the discovery of a handful of NBP sherds apart from the highly polished sand-stone fragments, polished Black ware and Black-and-red ware pottery similar to those of Ujjain and Kausambi sites. Though, not much can be said of these minor antiquities, due mainly to a very small scale attempt, the interest lies in the fact that these new evidences coming, for the first time from Karṇāṭaka, amply confirm the Magadhan impact with NBP and associated relics within the early historical Buddhist context. These evidences open up exciting prospects for a planned research.

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SOME MORE EARLY EVIDENCES

According to *Mahāvaṁśa* (XIV, 6 and XIX, 11-12) Moggaliputta Ṭissa sent one Mahādeva to Vanavasi. We also come to know that several Buddhist *āchāryas* under the leadership of one Chandragupta proceeded from Vanavasi to Śrī Lanka to attend the inaugural of the great *Stūpa* raised by King Duttahagāmini (101-77 B.C.). Vanavasi, (Banavasi) did not yield any Mauryan or Pre-Christian era evidences till date. But Hiuen Tsang (640 A.D.) refers to Aśokan *Stūpas* at Vanavasi. Sannati has clearly revealed an extensive fortified township, besides Buddhist relics and pottery as in the early Magadhan sites of north-east India. It may be stated that Megasthenese mentioned extensive fortified townships, nearly 30 in number, existing in South India and on the present evidence Sannati qualifies to be one among them.

The spread of Buddhism from *Āndhrapatha* to north Karṇāṭaka appears to be through inland Rāyalaseema area. It is necessary here to state that Sir Mortimer Wheeler himself corrected his older[6] views when he declared that "the three copies of Aśoka's Minor Rock edicts at Brahmagiri were appropriately addressed to the southern most colonists of his Father's Empire, and not, as I had previously conjectured to their Bucolic precursors".

The recent excavations in Śrī Lanka by the Anurādhapura Citadel Archaeological Project *(ACAP)* resulted in the discovery of NBP ware, PMC and Black-and-red ware from Anurādhapura citadel and Gedige *Chaityas*. A consistent run of C-14 dates from the excavations suggest that the earliest settlements can be dated to 600-450 B.C. Basing on these evidences F.R. Allchin[7] pointed out that "some of the major settlements in the south, no less than Śrī Lanka, may have been the products of pre-Mauryan Gangetic colonialism; while others may be found to have been the products of Mauryan Imperial and administrative expansion". What is of great importance is the discovery of Brāhmī inscriptions on numerous broken pottery sherds associated with structures and deposits dated to early and middle 5th century B.C. A tantalising theory is putforth redefining the very origins and development of Brāhmī writing in the Indian subcontinent. The Śrī Lankan sequence, no doubt, brings earliest recorded examples as on date, of the Brāhmī writing from a pre-Mauryan strata.

This might have been so even in some of the historical city sites of Magadha, Madhyadēśa and on the long south east coast of Bengal-Orissa, Andhra and Tamilnadu where evidences of early historic urban cities are prolific[8]. Unfortunately the archaeologists and epigraphists did not come together and worked in an analytical manner recognising and assigning the evidence of writing from a pre-Mauryan strata in a given site. The extent examples of Brāhmī writing particularly on such media, like pottery, clay tablets, etc. were generally bracketed and assigned to the times of Aśoka only. No doubt this Mauryan Emperor has been the greatest advocate of *dharma* preaching through Brāhmī writing on an unprecedented scale over a permanent media, such as lofty stone pillar Edicts, Minor or

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Major Rock Edicts throughout the length and breadth of the country. This evidence has overwhelmed the Archaeologists and Historians of the country for the past several decades. Even now attempts are scarcely made to document the evidences of early Brāhmī writings from the pre-Mauryan levels.

A POLISHED RING STONE FROM SANNATI DIGS

A new dimension to the early Mauryan sequence is forthcoming from a unique find of a polished ring stone (6 cm. diametre), discovered by Dr. Devaraj and his team of the Dept. of Archaeology and Museums, who are conducting excavations at Sannati. These stone discs focus an imagery of fertility and the luxuriant stylised Palmyra trees intermittantly with birds, (peacocks and geese) animals (Bull, humped camel, etc.) and fecund Godesses with large breasts and hips, small waist and exposed genitalia. These examples are confined to North-West India (Taxila) to Gangetic Magadhan[9] area of Nanda-Mauryan date as researched by Rita Dutta. These enigmatic group of objects are perhaps meant for ritual use prevailing during the Mauryan times. It is for the first time that such cult objects are found in peninsular India.

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1. It may be recalled here with gratitude that Dr. R. C. Sharma, the then Director, Indian Museum, included my article on those Edicts immediately after their discovery in Jan. 1989, *cf.* "Rock Edicts of Aśoka from Sannati, Chitapur Taluk, Gulbarga district (Karnataka)" in the *Indian Museum Bulletin,* Vol. XXII, (Calcutta, 1989), pp. 7-15. For all the records of Sannati, see Dr. I.K. Sarma and J. Varaprasada Rao, *Early Brahmi Inscriptions from Sannati,* (New Delhi, 1993), Part-I.
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AŚOKA AND THE TAMIL COUNTRY : THE EVIDENCE OF ARCHAEOLOGY

R. NAGASWAMY

INTRODUCTION

Hartmut Scharfe, in his recent work "investigations in Kautalya's Manual of Political Science"—(revised) published, Verlog 1993, after examining almost all arguments so far advanced to date Kautilya's '*Artha sāstra*', ranging from 3rd cent. B.C. to 4th cent. A.D., comes to the conclusion, that the text in its present form could be dated to 1st or preferably to 2nd cent. A.D. (p. 293).

Whatever may be the merits or demerits of this arguments, one thing is clear from his presentation, that many scholars have found serious difficulties in accepting the date of 3rd cent. B.C., to the age of Chandra Gupta Maurya.

I may mention that one of the important problem facing us as epigraphists is the reference to the *sāsana* in the *Artha sāstra*. For example it says that

Sāsana pradhānā hi rājānah, tan mūlatvāt sandhi vigrahayor (2.10.2.)

i.e. kings, principally depend on edicts for war and peace.

Tasmāt amātya-sampadōpetāh sarva-samaya-vid, āsu granthah Cāru-aksharah Lekhanavācana-samrthah lekhakah syāt. (2.10.2)

i.e. only, who is endowed with the excellances of an officer (*mantri*) conversant with all conventions, quick in drafting, with beautiful handwritings, capable of reading written documents, should be (made) a scribe.

Thus the whole chapter is on written documents and a scribe. There are several passages also in other chapters, that emphasize, the written documents. But we are yet to come across any indisputable evidence of written script, before the time of Aśoka. The absence of any document (or edict) prior to the time of Aśoka, would cast doubt on the B.C. date of the text, even if one concedes some knowledge of writing earlier. The popularity of writing to the extend mentioned in the '*Artha sāstra*' is not attested by documents prior to Aśoka.

It is possible that the science of *artha*, was also verbally transmitted for some centuries as in the case of Vedas and Upanishads and when writing became the norm, got reduced

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to writing, incorporating also contemporary concepts. We are obliged to accept 1st—2nd cent. A.D. as the possible date of the *Artha sāstra* as it exists today.

This line of argument has one important aspect to be studied from the Tamil regions. So far, scholars have been dating Sangam Tamil poems from 3rd cent. B.C. to 1st cent. A.D., though the learned professor Nilakanta Sastri has always been suggesting first two centuries of the A.D. as the date of sangam classic.

I have shown that the recent archaeological excavations conducted in Tamil Nadu, and the antiquities found in the past 20 years, point out that the sangam classics could now be dated to the age when the Roman contact reached a substantial state, that is 1st to 2nd cent. A.D.

If the present *Artha sāstra* is also datable to that period, one should now re-examine the corelations. Before examining this corelation, we may notice some of the recent archaeological and other finds.

KARUR EXCAVATIONS

Among the most important places that have yielded valuable results in recent years, Karur, the head quarters in Trichy district is of utmost importance.

Situated on the banks of the river An porunai, now called Amaravati, the town Karur and its surrounding have been yielding Roman Coins—gold and silver in hundreds as Treasure Trove for the past two hundred years. It has epigraphs from 8th cent. A.D. mentioning the town both as Vanci and Karur. It is also mentioned in Brahmi inscriptions, found at Pukalur, situated ten kilometres away from this town. What is more, three generations of ruling Chera monarchs, are mentioned in a Tamil Brahmi inscription, at Pukalur. There has been a long debate among scholars whether it is identical with Vanci the Capital of the Cheras of the Sangam age. It was becoming clear that this Karur was the capital of the ancient Cheras.

Two important events, have further settled the issue of the Chera capital as this town. The town was excavated under my guidance. As it is a very flourishing industrial town adequate space for horizontal excavation, is not available. A few trenches were laid, at different places to assess its archaeological potential. The excavation yielded a continuous occupation of over two thousand years, beginning from 3rd-2nd cent. B.C. Among the finds, inscribed pot sherds, with Tamil Brahmi writings, were found along with amphora of Mediterranean region, in deposits assignable to 1st-2nd cent. A.D. The occurrence of Rouletted ware, Arretine ware, and amphorae with double handles etc., point to the Roman contact with the site. Other finds include Roman silver coin, much corroded, and indigenous copper coins square in shape, with elephant on one side and the royal emblem of 'bow'

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on the other. The occurrence of sherds with Tamil Brahmi script in the stratigraphical level of 1st-2nd cent. A.D., give a firm chronology to the Tamil Brahmi script. The Pukalur Chera inscription could also now be firmly dated to 1st to 2nd cent. A.D. The absence of inscribed sherds in the pre-Christian levels may also be noted.

The second event of considerable importance, is the find of large number of coins, inscribed seals, beads, etc. including Roman gold coins, on the banks of Amaravati. These finds are almost phenomenol. Several hundred coins, have been reported. Some of the seals, carry names in Tamil Brahmi characters. Among several such finds, is a unique gold ring showing a couple of extra-ordinary beauty, recalling mature Amaravati sculptures of Andhradesa. Assignable to first to 2nd cent. A.D., this gold ring is a pointer to the extensive art and cultural contact, Karur, the capital of the Cheras, had with the rest of India.

Other important finds include some Chera coins, bearing the names of the Chera rulers in Tamil Brahmi script. Kol irumporai; Mākkodai, Kuṭṭuvan kōdai, are the three such coins. It is significant that these coins are issued in imitation of Roman coins, with the head of the ruling king resembling the heads of Roman emperors. Further these Chera rulers who have issued the coins, are mentioned in the Tamil Sangam classics. They obviously ruled only when the Roman contact was very active, from the time Tiberius. The Sangam classics themselves, could be firmly dated to 1st and 2nd cent. C.E. The Roman impact on Tamil court has been far more deeper than has been hitherto felt.

The firm dating of the Sangam classics, open up new vistas in the study of Tamil culture and its Pan Indian contact.

ALAGANKULAM

Alagankulam, at the mouth of the river Vaigai, near Ramesvaram, is another important centre, that was excavated in recent times. The city of Madurai, the capital of the Pandyas, is situated on the banks of this river Vaigai. The excavations at Alagankulam, were conducted under my directions, that yielded antiquities of considerable interest. Amphora, rouletted ware, inscribed pot sherds with Tamil Brahmi script, stamped pottery have been found. Among the pot sherds, two varieties deserve special attention. A large quantity of pot sherds with a fine red polish, resembling the Arretine ware were found. These pot sherds are identified with the help of British Museum experts, as "Northern African red ware", also called "Tunisian ware", and are datable to 2nd-3rd cent. A.D. The second type of pottery is the Northern Black polished ware—the NBP associated with the Mauryas. The occurrence of NBP, almost from the 3rd cent. B.C., as revealed by stratigraphy, shows that the extreme South of Tamil Nadu, Ramesvaram, was in contact with the Mauryas of the North from Aśokan times, if not earlier. NBP has also been reported from Sri Lanka in recent times.

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The other significant find at Alagankulam, was a Roman Copper coin of Valentine II, issued from Antioch, in Syria in 380 A.D. The coin has been found in a stratified level and is thus of great value for chronology. That the Romans have been in contact with the Tamils even in the 4th and 5th cent. A.D., is thus attested. As Alagankulam lies at the mouth of the river Vaigai, it served obviously as an important port of the Pandyas.

The other ancient Port of the Pandyas, Korkai, mentioned in the works of the classical geographers of the west and the Sangam Tamil work, was also excavated by me earlier. This has yielded NBP ware, attesting to the Mauryan contact.

JAMBAI-THIRUKKOYILUR

Thirukkoyilur in the northern part of Tamil Nadu, was the capital of the chieftains, Malaiyamans of the Sangam age. A certain Thiru-mudi-k-kāri, figures prominently in Sangam works as a liberal patron and an ally of the Chera. This place has sprung into Archaeological prominance, by two recent discoveries. Near this town, were found a large hoard Roman gold coins,—over 200 coins were recovered by the Police, though it is believed a considerable number disappeared. As many as 12 Roman emperors are represented in these coins, beginning from Tiberius (14-37 A.D.) to that of Calcalla (211-212 A.D.). The coins seem to have been used for jewellery and recent studies seem to indicate they were copies. Whatever their nature be, Roman gold continued to pour into the Tamil country upto the 3rd cent. A.D.

The other important find is an epigraph, noticed at Jambai, near this town, by my student, and read by me for the first time. The record is a single line edict, recording an abode (Jaina) caused to be made by Atiyamān Nedumān Anci, the Satyaputra. The language of the record is a mixure of Tamil and Prakrit and reads :—"*SATIYAPUTO ATIYAN NEṬUMĀN ANCI CEYIVITTA PĀLI*".

This record settles the issue of who the Satyaputras, mentioned by Aśoka, were. That they were the Atiyamāns, a feudatory chiefs mentioned in the Sangam classics is beyond doubt. The inscription assignable to first cent. A.D., mentions the Atiya Chief Nedumām Anci, a hero celebrated in the Sangam classics. It is known that Aśoka, mentions Satyaputras in his inscriptions along with the Cholas, Pandyas and Kerala putras. The Satyaputras weilded sufficient power in the time of Aśoka (3rd cent. B.C.) almost on par with the Cheras, Cholas and Pandyas. However the Atiyamān, mentioned in the Jambai record is assignable to first cent. A.D., and probably was a descendent of the dynasty. That would show they had a rule, though as a minor chiefs, for over 300 years. This Atiyamān was ruling with Takadūr (modern Dharmapuri) in Salem District as his capital. The presence of his record near Thirukkoyilūr, the capital of the Malaiyamān, shows that this region was under the Atiyamān

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when the edict was issued. Surprisingly, the Sangam Classic, refers in glowing terms, to the sack of Thirukkoyilur by the Atiya, a remarkale confirmation to the historicity of the Sangam Tamil works.

SANGAM TAMILS

Recent archaeological and epigraphical discoveries have shown that the Sangam Tamil Classics, contain for more factual historical material, thàn hitherto realised and deserve to be studied from All Indian perspective, especially on the nature of state, judiciary, economy, society and religious practises. There has been a distorted emphasis, on a culture, said to be independent, of the pan Indian culture, based on irrelevant and unscientific material. It would not be possible to go into all these aspects in this paper. A few points of telling nature are indicated from the Sangam age.

The Sangam Tamils accepted the superiority of the Vedas and were guided by the Smrities in their Statecraft, judiciary, religious beliefs, as in birth, marriage, and death rites, and worship of the Gods.

Whenever the Sangam Tamils thought of the country, they speak of Indian continent as a whole, from the Himalayas in the north, the Kanyakumari in the south, the Bay of Bengal (called *Sagara*) in the east and the ocean (Arabian sea) in the west. This is spoken of with reference to the Pāṇḍya. Such a concept is repeated in several poems and that too while referring to very early kings for example the early Chera Utiyan Cheral is sung, pointing to the region lying between Himalayas in the North and the Potiyil mountain in the south. The poet sings that the antelopes shall sleep, in the light of the three sacrificial fires (the Vedic fires—*Āhavaniya, Gārhaspaīya* and *Dakshiṇāgni*) in which Vedic Brahmins perform Yajñas in the evening as in the Himalayas and the Potiyil hills (puram-2).

The kings held the Vedic Brahmins in very great esteem and saluted them. The Pandya Palyagasalai Mudukudimi Peruvaludi, bowed down before the Brahmins well-versed in the four Vedas (Puram-6). He also worshipped in the temple of the three eyed Lord Śiva, who is called a *muni—Ṛshi*, pointed references to the four Vedas are found in many verses. One of the poet addressing the king, states that his ministers shall remain faultless with their steadfast assistance, even if the path of the four Vedas slip, a clear indication of the high value attached to the four Vedas. The Vedic path is called *Veda-neri.* It also shows that the judicial and administrative system was based in the Vedic injunctions in the Tamil country in the beginning of the Christian era (Puram-2).

The Cheras, Cholas, and the Pandyas performed Vedic sacrifices. A Panday king planted several yūasthambas after completing may Vedic yāgas by pouring ghee as *āhuti*, prescribed by the four Vedas. Some of the kings are addressed as Chakravartins. The king

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is said to possess the nature of the *Panca-bhūtas*, the patience to bear the burden of the people, like the earth, deep deliberations like the expansive sky, destructive striking power like the fire, and cool breeze to the people like waters.

A Chera king is said to be praised, unitedly by people of the countryside, forests, hills and mountains, situated within Himalayas in the north, Kanyakumari in the south, and the eastern and western oceans. He is eulogised as one who punishes the wicked, protects the subject, enricher the treasury and impartial in administering justice (Puram-17). It is almost a Tamil rendering of what Atri in his *dharmasastra* says as

दुष्टस्य दण्डः सुजनस्य पूजा
न्यायेन कोशस्य च संप्रवृद्धिः
अपक्षपातः अर्थिषु राष्ट्ररक्षा
पञ्चैव यजाः कथिता नृपाणाम्

Rama Jois I 606

The Chola king Ilam-Cēt-Cenni is said to understand those adoring him, does not listen to slandering, personally enquiries into disputes, and having evaluated the evidences properly, punishes appropriately and shows compassion towards penitants. All these are qualities mentioned again and again in the Dharma sāstras. That the king is personally responsible for the administration of justice after due deliberations is mentioned by Katyāyana

यत्र कर्माणि नृपतिः स्वयं पश्यति धर्मतः
तत्र साधु समाचारः निवसेयुः सुखं प्रजाः

The Tamil Sangam poem, gives almost a translation as

Nī mey kaṇṭa Tīmai Kāṇin oppa nādi attaka orutti

shows the statecraft as enunciated by the Smṛtikaras was strictly enforced by the king.

Some of the statements found in Aśokan edict are found in Sangam Tamil works.

A Chera is adviced, that he should not go to hell like those who do not possess love and grace, but should protect his subjects as his children.

"*Kāval Kulavi Kolpavarin ompumati*" (Puram 5)

Aśoka says

प्रणयं गच्छेम सुमनुब्यानां
सर्वे मनुष्याः प्रजा मम

He also says

यथा पिता एवं नो राजा

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similarly a verse addressed to Pāṇḍya Neduncezhiyan, speaks of both this world and the other world.

Kautilya says that a small land, capable of yielding crops is far better than a vast waste land. The same thought is mentioned in a Sangam poem.

"Vast land, says the work, ever depending on rains is not suitable for king's exertion, he should improve irrigation and bring lands under cultivation, for those who provide food are verily the ones who give life, and food is obtained by cultivating the fields" (Puram 18).

As has been shown above, and there are several corelations between Sangam poems, and Mauryan society, the Tamil poems give greater insight into Indian society, as a whole. Before we go on to the next stage in Tamil society, a few words found in Tamil Sangam works may be noted. These words, which are of vital importance to the understanding of Tamil society are essentially northern words, prakrit. The Tamil words and their equivalents are given below.

Words	Tamil	Prakrit or Sanskrit
King	Aracan	Rājā
Merchant	Vanikan	Vānikan
Subject	Kuṭi	Kuṭi
Veda	Veda	Veda
Soldier	Paṭai	Bhatai
Shield	Kavaca	Kavaca
Hand	Bahu	Vāhu
Face	Mukha	Mukha
Rule	Kōl	Daṇda
Rights	Tāyam	Dāyam
Enjoyment	Bokam	Bhogam
Territory	Mandalam	Mandalam
World	Ulakam	Ulakam
Chastity	Karpu	Kalpa
Field	Kalam	Khalam
Vedics hymns	Mantiram	Mantram
Offering	Bali	Bali
		etc.

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All these would indicate that by the first—2nd cent. A.D., the kingship, administration, judiciary, economy, social and religious faiths of the Tamil country are the same found in all parts of India. They are based on Vedas and smritis and is Vaidika mārga.

The main constituents of the society are the King, the Brahmin ācārya, Judicial officers, the Commanders, Amātyas, territorial administrators, the cultivators and others.

PULĀMKURUCHI

In this connection, a remarkable epigraph in Tamil, from Pulāmkuruchi in the Pudukkottai region deserves notice. (Read and published by me for the first time in 1981). The inscription, is dated in the 3rd cent. A.D. There are three segments of the inscriptions. The central one is damaged fully, the first one is damaged at the beginning while the third is in good shape. The record is dated in the year, one hundred ninety two, probably Saka era, and was issued by the king Koc-cendan-Kūrran. It mentions his commander in chief, who caused three temples to be erected, two temples to Puranic deities—Devakulas, and the third probably to a Jain Tirthankara. The records refer to gifts of lands and revenue to the temples and also regulations stipulated for those worshipping in the temples. The endowments were placed under the protection of several officers, owners of Brahmadāyas, Chiefs of territorial divisions, protectors of cultivable fields, regulators of Brahmadāya endowments etc.

There is also mention of protectors of villages, legal executors, secret officers, soldiers, treasurers and others.

The records mention exemption from certain levies.

The king's order was orally issued, which was heard by three high ranking officers. The order was brought to the village, and drafted by another officer and finally inscribed by a scribe.

The record mentions several Brahmadāya—lands endowed to Brahmiṇs. One of the village bears the name Mangalam, technical word for Brahmin settlement called Caturvedi mangalam in later periods. The temples of Gods are called Devakulam. While a monastry is called Tapata-p-palli, regular territorial divisions are called Nāḍu-Pāṇḍi Nāḍu and Kongu Nāḍu are mentioned. The owners of the Brahmadāya villages are called Brahmadāya-Kilavar (Brahma-dāya-Vṛddhas). Mention has been made of the commander-in-chief, Padai-t-talaivan. There are references to *aram-neri ceyvār*, equal to Dharma mahā-mātras.

There are several other factors that show the state-structure as found in other parts of India. On account of their historic significance, the translation of the inscriptions are included here.

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A record from Hirahadahalli, issued by a Pallava ruler, Sivaskandavarman, issued in the fourth cent., shows the continuity of the concepts of state and rulership. The record in prakrit was issued from Kanchipuram. The later history of Tamil Nadu is well known.

Thus from Archaeological, epigraphical and literary sources, it is seen that Tamil Nadu had the same concepts as found in all parts of India, governing the state and life of the people and that was Vaidic in nature.

PŪLĀMKURUCHI INSCRIPTION NO. 1

(This is greatly damaged at the beginning.)

In the year one hundred .....

..... Wet land and dry land and Vellerrān mangalam

..... both the banks

..... Ciṟṟaiyūr, a brahmadaya in (the territorial division) Kudalur Nādu.

..... Pula-t-tevan who had the rights over Brahmadayas, Landlordship (*Karānmai*) and *mīyatchi*, sold (after receiving the price) the dry land and cultivable land named Kataṅgavayal in that village.

..... the rightful ownership of Brahmadayas in Brahmadaya villages, and

ownership in Brahmadaya, Landlordship.

..... The wet and dry lands enjoyed under Brahmādāya ownership and also under Kārāṇmai (season crops),

his right in Pāṇḍi nādu and Konganādu

the rights over threshing floors and mēlāṇmai rights

his tax dues on (cattle) irrigation

..... the owner.

Owners of Brahmadāyas, the protectors of Territorial divisions, the protectors of cultivable land (or out posts) and protectors of Salt yielding villages (Uppuru Kāppār), the regulators of Brahmadāya endowments, and Tattamān, should levy on each count, one thousand six hundred Kāṇam.

This was received (heard) by Inangumān, owner of Nallam, who was a ulaviyap-perum tiṇai. Ilam-Kurram, a shareholder of Nallam, who was a ulaviya p-perum-tinai of Alattūr, Kangumān, a judge (*manrādi*).

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TRANSLATION OF SEGMENT III

One hundred and ninety second year of king, Cendan-Kurrān ; day 36th *month Tai*; 5th day! the great commander (named) Ẹnkumān son of Marukaṇ—of Kadalakam caused the following to be erected.

1. The temple (*Devakulam*) erected on the hill Paccericinmalai, situated in Velkūru, in the (territorial division) Ollaiyur Kūrram.
2. The temple (*Devakulam*) erected at Vilamar in the (territorial division) Mutturruk-kūṟṟam, and
3. The temple (*Koṭṭam*) of Vaci Devanar in the Tapata-p-palli (in the monastry) situated to the north of the tank, named ulaviyattān at Matirai ;

These were taken under their protection for administration, by the four-fold *tiṇais* (Departments), by those incharge of inner services of the palace, and by the royal treasurers.

Except those who were appointed, for the above institutions, after due deliberation, by the protectors of the village, the legal executors, the secret officers, the soldiers, and the treasurers incharge of administering endowments, others should not officiate as priests.

Among them only the descendents of those who were appointed at Velkūru by the Lord, who died at Kudalūr,, should become the legal family (to worship) to the temple, erected on top of Paccericilmalai.

Except the due services, others who do wrongful acts to that temple, should be fined.

The king was pleased to order the same being inscribed. This was received (heard) Inangumān, the Chief of Nallam, a ulaviya-p-perum-tiṇai.

Kiram kāri ... arukilān, a ulaviya-p-perum-tiṇai and Kumarān pōndai of Ambar, a ulaviya-p-perum-tiṇai.

Tāman Kāri Kaṇṇan, a writer of documents, heard (received) this order, came and made this proclamation.

I, Nariyan-Nariyaṅ-Kāri, of Vennāṭu, wrote this final document, as decreed.

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MAURYAN BUDDHISM : UNIQUE EVIDENCES FROM SANNATI AND KANAGANAHALLI IN KARNATAKA

D. JITENDRA DAS

The discovery of Aśokan inscriptions, Major Edicts XII and XIV and Special Edicts I and II at Sannati, dt. Gulbarga on a unique granite stone stele evoked great excitement and interest among the scholars of South Indian history[1]. The stele on which the Edicts are found does not come under the known classes of Major, Minor Pillar or Separate Edicts issued by the Mauryan king Aśoka but happened to be a unique type. The worked out granite stele is about 3-metres high and 1.5 metres wide and contained a full compliment of Aśokan Edicts, but for the defacement and reuse as a base stone for an icon. It had also the special Edicts I and II as at Dhauli in Orissa meant specially for the conquered people. The area of Sannati falling in Northern Karnataka-Andhra was included in the Mauryan *Vijita* territory almost around the same time, when Aśoka conquered Kalinga. In all probability, like Dhānyakaṭaka (Amaravati) in coastal Andhra, the areas of north Karnataka formed part of the Mauryan Empire. The Nanda-Maurya conflicts in the South need not be taken any more as mere literary conjectures. It was precisely this factor perhaps that forced Aśoka, the most powerful ruler of the dynasty, to annex the areas into his empire (*antaḥ* or *iha rāja vishaya*) and close to the northern borders of Karnataka, on the banks of the river Bhima, a tributary of Krishna, caused several Rock edicts amplifying the spread of *Dharma*. [See Nittur and Udegolam in dt. Bellary, Brahmagiri, Siddapur and Jatinga Rameswara in dt. Chitradurga; Maski, Gavimath and Palkigundu in dt. Raichur; Rajulamandagiri, Jonnagiri in dt. Kurnool (A. P.).] In this political scenario, Aśoka soon after the Kalinga war, perhaps made a dent, and annexed parts of North Karnataka in dt. Gulbarga and firmly established Buddhism.

What is highly interesting in recent months, is a small scale excavation in a spot called Raṇamaṇḍala[2] (War field), Site-2, at Sannati which resulted in the discovery of a handful of Northern Black Polished ware (N. B. P), sherds, apart from highly polished Black and Black-and-Red ware pottery similar to those of Ujjain and Kausambi sites. These new evidences, for the first time, from Karnataka amply confirm the Magadhan impact with N. B. P. and Punch marked coins in an early Buddhist context.

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A UNIQUE POLISHED RING STONE FROM SANNATI DIGS : (Ph. 1)

A new dimension to the Early or Pre-Mauryan sequence is forthcoming from a unique find of a polished ring stone, 6 cm. diametre, obtained from Sannati digs conducted by the Dept. of Archaeology and Museums Govt. of Karnataka, under Dr. Devraj and his colleagues.[3] These stone discs focus an imagery of fertility and the luxuriant stylised palmyra trees intermittantly with birds, (peacocks and geese), animals (bull, humped camel etc.), and fecund Goddesses with large breasts and hips, small waist and exposed genitalia. These examples are confined to North-West India (Taxila) to Gangetic Magadhan area of Nanda-Maurya date as researched by Rita Dutta[4] of Indian Museum, Calcutta. These discular polished group of objects were perhaps meant for ritual use prevailing during the Mauryan times. It is, for the first time, that such cult objects are found in Peninsular India.

KANAGANAHALLI MAHĀSTŪPA

Recent discoveries by the Bangalore Circle of the Archaeological Survey of India in the fields belonging to the tiny hamlet named Kanaganahalli on the left bank of the river Bhima, just 3 km south of Sannati deserved special study. The remarkable discoveries are fit enough to be regarded[5] as "gift to the coming Millennium", for it is, for the first time, that any anthropomorphic representation of Emperor Aśoka, his Queen has been found, that too with the identifying inscription in Brāhmī characters of 1st century B. C. The label below the carving reads *RĀYĀ AŚOKO* who is causing the donation in the traditional way pouring water through the right palm. (Photos 2 and 3).

The other inscriptions found on the carved sculptured members of the *Mahāchaītya* reveal the names of several kings, nobles, traders and even dancing girls who caused these decoratives. They hailed from Kāshmira-Gāndhara, Magadha, Andhra to Kanyākumāri and beyond from Śrīlanka as well. The sculptured panels revealed scenes of the rulers of the area, particularly of the Sātavāhana dynasty. The kings referred are Rāya Simuka, Rāya Sātavāhana, Puḷumāvi and one Mahā Govinda. Many coins of the pre-Sātavāhana and Sātavāhana period have been found. Two distinct phases were noticed. The first one of the Hīnayāna is of the Mauryan period and the elaborate decorative art forms, such as a high railing and improvised drum and dome parts were caused during the 1st-2nd centuries of the Christian era. The Pre-Sātavāhana strata at the site seems to be very promising and important and nearly 6 metres below the Satavahana occupation need to be carefully exposed, recorded, studied and preserved at the site. As can be seen at the site today nearly 180 inscribed[6] sculptured parts of the *Stūpa* railing, drum and dome parts are found on a mere surface count itself.

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1. It may be stated here that the remarkable discoveries of Sannati, the Aśokan Edicts and *Mahāstūpa*, were first published by the Indian Museum, Calcutta in its Journal in January 1989 and it is gratifying that Kanaganahalli finds are also outlined, for the fir time in this very Research Journal. Cf. Rock Edicts of Aśoka from Sannati, Chitapur Taluk, Gulbarga district (Karnataka), in the *Indian Museum, Bulletin*, Vol. XXII, (Calcutta, 1989), pp. 7-15. For all the records of Sannati see I. K. Sarma and J. Varaprasada Rao, *Early Brāhmī Inscriptions from Sannati*, (New Delhi, 1993), Part I.
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3. D. V. Devraj and H. T. Talwar, *Interim Report on the Excavations at Sannati, 1993-95*, (Mysore, 1996), pp. 14-16. Stone Disc. Pl. 38. Fig. 30.
4. Rita Dutta (Mandal), "Ring Stone/Disc Stone—An appraisal of the Problem", *Indian Museum Bulletin*, Vol. XXI. (Calcutta, 1986), pp. 66-76. Aslo see *Samuel Eilenberg Collection of The Metropolitan Museum of Art, Bulletin*, (Spring, 1994), p. 19, Fig. 2.
5. "Sātavāhana Era Buddhist Site Found", *The Hindusthan Times*, (New Delhi, 7th August 1999), p. 24.
6. Dr. K. P. Poonacha and other colleagues of the Bangalore Circle deserve special appreciation and thanks for their devoted work at the site. (Late) Shri Ajay Shankar, the then Director General of the Archaeological Survey had shown special interest in the work at this unique site and sanctioned grants for protection and further field studies. We are grateful to this departed soul.

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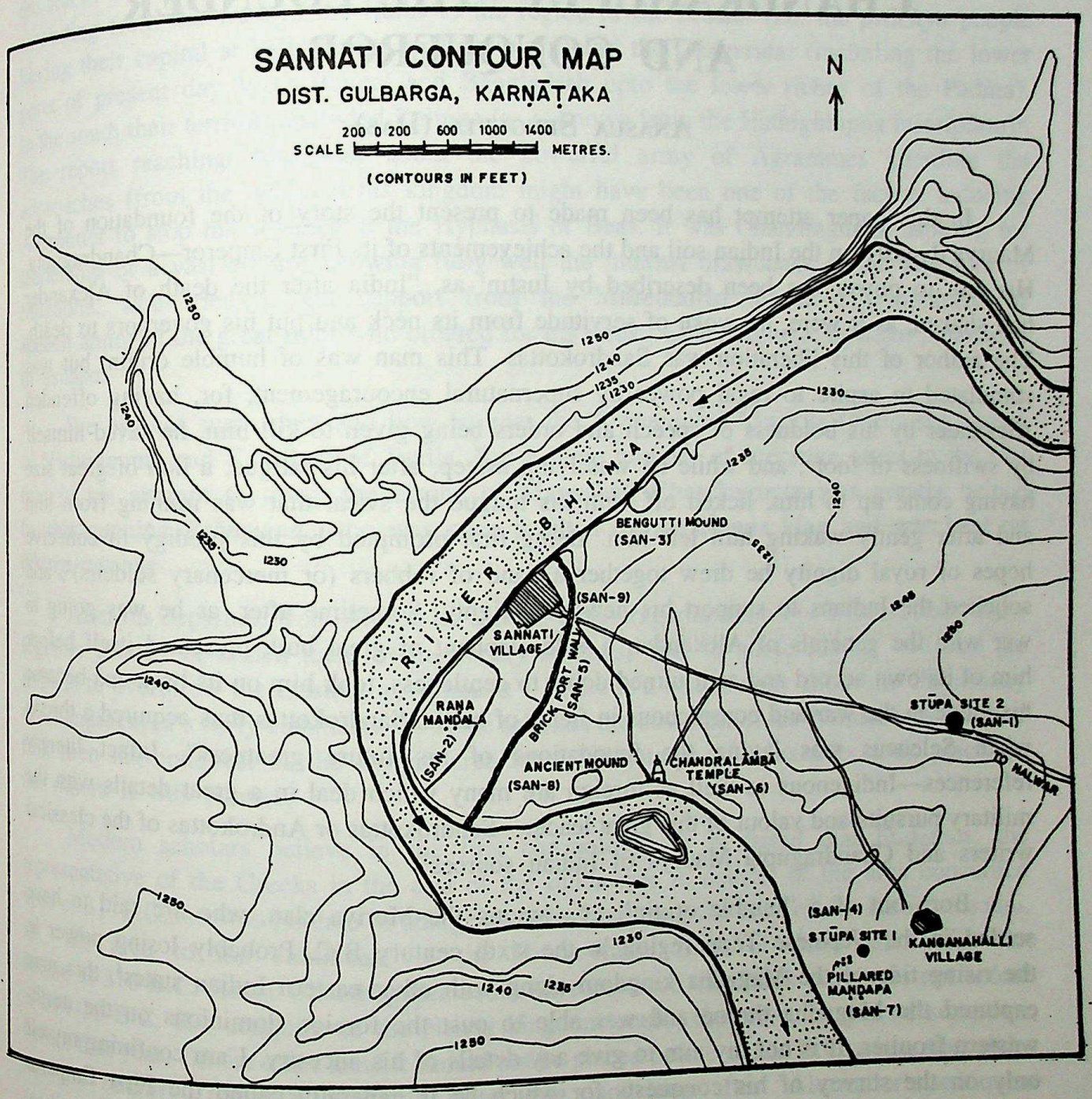

Fig.1. Sannati, Contour Map

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CHANDRAGUPTA—THE FOUNDER AND CONQUEROR

ANASUA SENGUPTA (DAS)

In this paper attempt has been made to present the story of the foundation of the Maurya dynasty on the Indian soil and the achievements of its First Emperor—Chandragupta. His rise to power has been described by Justin[1] as, "India after the death of Alexander had shaken, as it were, the yoke of servitude from its neck and put his governors to death. The author of this liberation was Sandrokottas. This man was of humble origin, but was stimulated to aspire to regal power by supernatural encouragement, for, having offended Alexander by his boldness of speech and orders being given to kill him, he saved himself by swiftness of foot ; and while he was lying asleep, after his fatigue, a lion of great size having come up to him, licked off with his tongue the sweat that was running from him and after gently waking him left him. Being first prompted by this prodigy to conceive hopes of royal dignity he drew together a band of robbers (or mercenary soldeirs)[2], and solicited the Indians to support his new sovereignty. Sometime after, as he was going to war with the generals of Alexander, a wild elephant of great bulk presented itself before him of its own accord and as it turned down to gentleness, took him on its back and became his guide in the war and conspicuous in fields of battle. Sandrokottas thus acquired a throne when Seleucus was laying the foundations of his future greatness". Infact literary references—Indigenous as well as foreign are many which deal in a great details with the military pursuits and valour of this great leader—Sandrokottas or Androkottas of the classical writers and Chandragupta Maurya of Indian sources[3].

Born out of a 'humble origin', i.e., among the Moriya clan, who are said to have settled in the Nepalese Terai region in the sixth century B.C. Probably losing power in the rising tide of the Magadha kingdom along with other eastern Indian states[4], this man captured the Magadha throne and was able to oust the foreign dominions on the north-western frontier. It is not my aim to give any details of his ancestry. I am confining myself only on the survey of his conquests for which he is generally called the First Emperor of India.

His emergence to limelight in the history of India might have occured in 326-25 B.C. when he met Alexander the great. The classical writers like Justin and Plutarch[5] state that

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he tried in vain to persuade Alexander to proceed against the Nanda king of Magadha who was detested by his subjects for low origin and tyranny. The Nanda ruler of the period was known to the classical writers as 'Agrammes' (identified by scholars with Augraseniya, the son of Ugrasena or Mahapadma Nanda) who is credited to have occupied a large territory extending from the west of the Indus to the region of the Prasioi (i.e. the *prāchya* people having their capital at Palimbothra or Pataliputra) and the Gangaridai (including the lower parts of present day West Bengal and Bangladesh upto the lower riches of the Padma). In the south their territory included Kaliṅga (as is known from the Hathigumpha inscription)[6]. The report reaching Alexander about the powerful army of Agrammes guarding the approaches (from the west) to his kingdom might have been one of the factors inducing Alexander to stop his advance at the Hyphasis or Beas. It was Chandragupta, aspiring for leadership of a vast empire knowing fully well the internal drawbacks of the kingdom of Magadha, who tried to get support from the Macedonian leader. His boldness of speech annoyed the great ruler who ordered for his arrest. Chandragupta, however, managed to escape.

We are not sure when and how he met the *Brāhmaṇa* Chāṇakya (variously known as Vishnugupta and Kauṭilya) of Taxila. But a large number of literature attest to the fact that in his attempt to usurp the throne of Magadha[7], Chandragupta was greatly helped by this cunning *Brāhmaṇa,* who was once insulted by the Nanda king and was bent on taking revenge.

After his departure from Alexander's camp Chandragupta retired to a forest tract, drew together a body of armed men (or mercenary soldiers) and, to quote Justin, 'solicited the Indians to overthrow the existing government'[8]. There is a controversy about the chronology of Chandragupta's early conquests. To some scholars the downfall of the Nandas was effected first then his conquest of the Punjab area from the satraps of Alexander took place, to the others it was reverse.

Modern scholars believe in the first chronology[9]. It is stated that Eudemus, the representative of the Greeks in the east of the Indus was in control of the area concerned upto c. 317B.C., so was Peithon in charge of India bordering the land of the Paropamisadai, i.e., the area to the south-east of the Hindu-Kush. Both of them left India not before c. 316 B.C. Hence Chandragupta could have captured the Greek provinces not before c. 317-16 B.C. His conquest of the Nanda kingdom could, therefore, be placed sometime before that year. On the other hand it should not be placed before c. 324 B.C. when Alexander left the country. Plutarch explicitly states that 'not long after' Alexander's conquest (ending in early 324B.C.) Androkottas 'who had by that time mounted the throne...subdued the whole of India'[10]. Hence Chandragupta's accession to the throne should be placed by c. 324 B.C.

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A number of literature including religious texts, dramas, treatieses, etc. describe the account of Chandragupta's conquest of Magadha. It is stated in the *Mudrārākshasa*[11] of Visākhadatta that Chanakya, eager to take revenge of his insult brought his protege Chandragupta and to help him Parvataka, a king of the Himalayan region. Then follows plots and counter plots between Chāṇakya and Rākshasa, the minister of Nanda. Parvataka besieges Pataliputra but is killed through a plot of the revengeful Vishnugupta in order to save Chandragupta by diverting attention of the Nanda minister, Parvataka's son Malayaketu then joins Rākshasa. Ultimately Chāṇakya makes Malayaketu captive, the Nanda king disappears from the scene, Chandragupta ascends the throne, Rākshasa becomes his minister and Chāṇakya, like a true brahmin returns to his hermitage.

Whatever might have been the actual fact one thing is clear that Chandragupta began his royal career with Magadha and other Indian provinces. We have already mentioned that the kingdom of Magadha under the Nandas included a vast territory. The Nanda kings are stated to have in command of an army comprising of cavalry, infantry, war-chariots as well as war elephants, i.e., *chaturaṅga senā* of the Indian texts. Moreover, the wealth of the Nanda dynasty has been referred to in several texts[12].

So when Chandragupta usurped the throne he was in command of a vast territory full of material resources and a well organised army. It was his only task to extend the boundaries of his empire and consolidate his position. We do not now whether his army actually penetrated into the Podiyil hills in the Tinnevelly district as claimed by the Saṅgam literature[13] and protected Nagerkhanda, and abode of the usages of eminent Khsatriyas in the Sikarpur Taluq as referred to in some late inscriptions from Karnataka[14] of 14th century A.D. But one thing is certain that if the large territory of peninsular India controlled by Aśoka has not been won by him or his father it would have been annexed to the Maurya empire in the days of Chandragupta.

We are, however, having a much dependable source in regard to his extension of empire over Anartta and Surashtra in the Kathiawar region. The Junagadh inscription[15] of Rudradāman I refers, among other things, of construction of the famous Sudarśana lake in that region by Pushyagupta, the high commissioner appointed by Chandragupta.

The subjugation of the whole of northern India from the Himalayas to the sea appears to be suggested by a passage in the *Arthaśāstra*[16] where the boundaries of *Chakravartikshetra* is referred to.

We may now take up the second phase of his conquest, i.e., his attack on 'Alexander's Prefects'. it is well known that after the passing away of Alexander his generals met at the Triparadisus Conference (in 321 B.C.), the empire was devided and Seleucus got the share of Asia including India. Some re-arrangements took place in the Indian Division.

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Peithon was incharge of the region lying between the Paropamisadai (south-east Hindukush) and the Indus. Taxiles (Ambhi) was in charge of the area along the Hydaspes (i.e. at least a part of the area which lay between the Indus and the Hydaspes or Jheelum). Porus was in charge of the territory along the Indus, apparently the lower Indus. Eudemus was the representative of the Greeks in the east of the Indus. According to the Diodorus[17] at the time of the partition of Triparadisus, Taxiles and Porus were virtually recognised independent. It appears that both the Indian kings entered into alliance with Chandragupta and thus the latter's sphere of influence extended to the Indus. Eudemus took revenge by murdering Porus. This could only have been possible after Taxiles became neutral or changed side. But ere long Eudemus and Peithon left India to join the civil war and met their end in the battlefield. Evidently Chandragupta now appeared on the scene and occupied the whole of the Punjab region.

According to Appian, Seleucus after his decisive victory over Antigonus of Ipsus became the master of the region extending from Phrygia to the Indus. Antigonus was ousted in 301B.C., so it is possible that in or around this year he could have come into conflict with Chandragupta, who had already been in possession of parts of the territory to the west of, at least the upper Indus and bordering the land of the Paropamisadai to the eouth-east of the Hindukush[18].

The classical writers like Strabo[19], Appian[20] and Plutarch state that Seleucus 'crossed the Indus and waged war with Androkottas, king of the Indians, who dwelt on the banks of that stream, until they came to an understanding with each other and contracted (i.e. effected by agreement) connection by marriage. According to Strabo the area of Paropamisadai (to the south-east of the Hindu-kush and in north-east of Afghanistan bordering the Indian subcontinent), the land of the Arachotoi to the south of that of the Paropamisadai (Kandahar region in south-eastern Afghanistan) and the country of Gedrosia on the sea coast and to the south of that of the Arachotoi (in south Baluchistan) were ceded by Seleucus to Sandrokottas who gave five hundred elephants in exchange.

We may point here to an interesting term 'connection by marriage'. It has been taken by some scholars to mean a royal matrimonial alliance. But the relevant words in the statements of the writers never prove that a royal marriage actually took place. It appears, as put by prof. B.N. Mukherjee,[21] that the words actually implied the right of inter-marriage (or connection by marriage) between the Greeks and the Indians. Such a legal sanction might well have been necessary at least in Arachosia where the Indians and people of Hellenic origin lived together.

The chronology of Chandragupta's career cannot be determined with precision. Since he reigned for only 24 years from c. 324B.C. the greater part of the subcontinent including the north-western section and eastern Afghanistan, the domain of the Nandas including

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Gangaridai (lower Bengal upto the mouth of the Padma, if not Pundravardhana) might have been under the Mauryas by 300B.C.

The brilliance of Chandragupta was not confined to his military zeal only. The great soldier who had liberated one part of his country from an unpopular dynasty and another from the yoke of foreign rule, the architect of an empire embracing the greater part of India was "as strenuous in the arts of peace as in the arts of war". He set out to accomplish the unity of India, but beyond its border he never cast his covetous eyes. The statement of Arrian, who apparenty quotes from Megasthenes that 'a sense of justice, they say, prevented an Indian king from attempting conquest beyond the limits of India' perhaps reflects one of the fundamental principles of Mauriyan foreign policy laid down by the founder of the line (known as state-circle) and upheld by his successors.

In civil government Chandragupta showed ample aptitude. Magasthenes, the Greek ambassador at his court, has left detail accounts of his system of Government. The selection of councillors from men respected on account of their high character and wisdom, an equitable system of judicial administration, efficient management of municipal affairs, development of roads and irrigation works, concessions to husbandsmen and artisans, encouragement of passenger traffic and commerce, etc. all points to the diplomatic quality of this great warrior. A special board of municipal officers engaged for looking after the foreigners in the metropolis of Pataliputra as also maintenance of a Judiciary for them speak of the presence of a considerable number of foreigners in the city. It may be conjectured that these outlandish people were merchants. In fact the Mauryas were the first political authority to have exercised control over both the Indus and the Ganga river system which supported the major agrarian community right from the time of their founder. We are told that there was the shipping department of which Megasthenes gives a hint, but the *'Arthaśāstra'* gives further details and it appears that coastal trade was also briskly going on[22].

Incidentally we may point out that although much have been told about the career and achievement of this great ruler all we have to depend on the lauds, tales, plays, even philosophical dissertaions of Indian languages. One searches in vain for his very name in the inscription of his grandson. The *Mahābhāshya* of Patanjali refers to *Chandraguptasabhā*[23] and to *Amitraghātā*[24], possibly his son, but records nothing about the deeds of the earliest of the Mauryas. The *Aśokāvadāna,* though notices his son Bindusara, has nothing to say about him. It thus becomes difficult to assess his achievements with any amount of authenticity. Lack of archaeological evidence add a problem to assert any chronology for this emperor.

How long he lived after the war with Seleucus cannot be precisely determined from Greek sources which are valuable for compiling the career of Chandragupta. The Jain

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tradition avers that towards the end of his life he became a convert to the religion of the Tirthankaras. It is also affirmed that when Magadha was confronted with a famine he abdicated in favour of his son and retired to Sravana Belagola in Karnataka with the saint Bhadrabahu[25].

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1. Watson's trans., p. 142 with slight emendations.
2. The original expression used by Justin has the sense of 'mercenary soldier' as well as that of 'robber'. However, the former sense is in consonance with Indian tradition recorded by Hemachandra in the Pariśishṭaparvan (VIII, 253-54) which states "Chāṇakya gathered for Chandragupta an army with wealth found underground (i.e., with the aid of mineralogy) for the purpose of uprooting Nanda".
3. The *Mahāvaṁsa,* the *Divyāvadāna,* Visākhadatta's *Mudrārākshasa*, the *Brihat kathā* of Gunadhya versions of which are preserved in the *Brihat-kathā-Mañjari* of Kshemendra and the Kathāsaritsāgara of Somadeva, the *Pariśishṭaparvan* of Hemachandra, the Junagadh Rock Inscription of Rudradaman I, etc.
4. H. C. Raychaudhuri, *Political History of Ancient India,* p. 267 : see also C.D. Chattopadhyaya, 'Early Life of Chandragupta Maurya', *B.C. Law Volume,* ed. D.R. Bhandarkar, pp. 590 f. ; R.K. Mukherjee, *Chandragupta Maurya and his Times,* 1952.
5. *Life of Alexander,* LXII
6. *Indian Historical Quarterly,* XIV, 1938, pp. 259ff.
7. The *Milindapañho* ; the *Mahāvamsā tika* ; the *Pariśishṭaparvan* ; the *Purāṇas* ; etc.
8. See Historiarum Philippicarum Libri, XLIV & XV.
9. B. N. Mukherjee's *Commentary to the Political History of Ancient India* by H. C. Raychaudhuri, 1996 pp 592ff.
10. Parallel Lives, Alexander, 62
11. A sixth century A.D. Text by Visakhadatta
12. The *Mudrārākshasa* refers to the Nandas as *'navanavatisatadravya-kotishvarāh* (Act III, verse 27) and '*Artharuchi*' (Act I) ; A passage of the *Kathā-sarit-sāgara* says that king Nanda possessed 990 millions of gold pieces (Tawney's Trans., Vol., I, p. 21) ; Turnour, *Mahāvaṁsa,* p. XXXIX ; Hsüan Tsang also refers to "the five treasures of king Nanda's seven precious substances".
13. S. Krishnaswami Aiyangar, *Biginnings of South Indian History,* ch. II ; cf. JRAS, 1924, 666.
14. *Mysore and Coorg from the inscriptions, Rice,* p. 10.

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15. H. C. Raychaudhuri, *Political History of Ancient India,* Commentary by B. N. Mukherjee, 1996, p. 240.
16. *Arthaśāstra,* IX. 1 ; *"Deśah Prithivi ; tasyām Himavat Samudrantaram Udichinam Yojanasahasra parimanamatiryak Chakravarti-Kshetram".*
17. Diodorus Siculus, XVIII, 39
18. Romaika, Syrian wars, XI, 55
19. XV. 2.9.
20. XI. 55
21. B. N. Mukherjee, Commentary to the *P.H.A.I. by* H.C. Raychaudhuri, 1996, pp 593-594
22. *Ibid.*, p. 254
23. I. 19
24. III. 22
25. *P.H.A.I., op.cit* p. 262

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AŚOKA—THE UNIFIER

S. K. Basu

If Chandragupta Maurya was the most successful emperor for laying the foundation of a vast and strong Mauryan empire, then his grandson Aśoka, the great, was the most celebrated benevolent ruler of all times who kept the country together quite successfully by following a time-tested magnificent policy based on his newly found Dhamma. The policy so introduced in the administration of the land was not only innovative in its basic approach towards the aims and objectives set forth by the state under his benign leadership but also proved to be quite effective one, both spiritually and emotionally, to keep the country together for quite an appreciable period of time. Around the time when Aśoka was reigning continnual and terrific wars were being fought in different parts of the then world. The great Punic War strated in 264 B.C. between the two major powers, Rome and Carthage. The Ptolemies and the Selucids were constantly at war with each other. The Parthinas who lived to the south-east of the Caspian sea, were conducting successful campaigns against the Greeks in all directions. The Satrap Diodotus of Bactria had broken away from Antiochia and set up an independent state in the heart of Asia. Considering the age in which Aśoka, the Great, came to the realm of royal power, his sudden volteface against war was quite surprising and in wide contrast to the otherwise prevailing trend of the time. It took great determination and termendous mental faculty for Aśoka the great to abhor the bloody path of war and tread on the divine and ever-illuminating path of all embracing love and piety towards all. By doing so he never shrank off from the royal obligation of preserving the territorial integrity of the vast Mauryan empire handed down to him almost on a platter. Riding on the chariot of his Dhamma—his main peaceful and non-violent weapon contrary to the martial art of the time—he ran across the country and was quite successful in rousing an wonderful feeling of unprecedented nationalism based on tolerance, love, compassion and piety amongst the entire masses of the country cutting across caste, creed and religion. Before we discuss the great far-reaching implications of his dhamma in detail on the broader question of national integration, both of his time and of the period we are living in, we would like to highlight certain important fundamental measures that Aśoka, the great, had adopted for fulfilling his dream of bringing the country peacefully together under the leadership of an ably administered central rule. One of the basic major steps towards building up a unified land

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under an able ruler is to have a developed communication system in order to make it sure that the royal administrative measures/instructions reah the subjects as quickly as possible for their information and compliance. Despite the fact that the communication system was not certainly as developed at that time as it is today we are surprised to see that the great king took adequate and appropriate measures to send the royal instructions, sometimes suitably edited and adopted according to local needs before "publishing" them singly (such as the Queen's edict at Kausambi) or in a series of edicts (like RE 1-XIV), to different parts or provinces of the empire. Strabo quoting Megasthenes who visited the court of Aśoka's grandfather Chandragupta refers to officials responsible for keeping the rivers "improved", making roads and placing pillars at "every ten stadia" "showing the by-roads and the distances". Such distance are actually indicated in the two Aramaic epigraphs of Priyadarśī (Aśoka) incribled on rock and discovered in the valley of the Laghman river in Afghanistan. These edicts also refer to a Krpty (karapathi), i.e. "a military road" or "lord's orad" which was obviously maintained by the Maurya administration. That the contents of royal rescripts despatched through official channel ultimately reached the public for whom these were primarily meant (the second and seventh Pillar Edicts) is suggested by the thirteenth Rock-Edict which claims that everywhere in the king's territory (and even in some areas outside it) the people "are conforming to instruction in the Law of Piety". Instructions meant for people belonging to non-governemental organisations (including the monks of the Buddhist church) could have been despatched to the addresses directly (Calcutta Bairat, Sarnath and Sanchi inscriptions) or through regional authorities.

We speak of this communication system very briefly just to make it clear that the first condition for unifying a country presupposes the existence of a well-structured and well maintained mail service so that the royal message/instruction, etc., may be well communicated to the public for compliance. That it was there and that it was made wide use of by the zealous emperor Aśoka is clear from the distribution pattern of his various edicts. In fact the extent of Aśoka's empire can be determined on the basis of the internal and external evidence of his Edicts. Aśoka called the territories within his empires *vijita, rāja viṣya,*etc. (conquered territory, royal domain) while those outside his empire both within the subcontinent and beyond—were designated as *amta-avijita* (unconquered frontiers). The Maurya empire included in it parts of Afghanistan. This was possibly due to cessation of territories, viz., Arachosia (Kandahar), Paropani-dasa (Kabul) and Gedrosia (southern Baluchistan) to Chandragupta Maurya by Seleucus of Syria. That Asoka retained his hold over these areas in Afghanistan is unmistakably proved by his edicts found in Afghanistan. (B. N. Mukherjee, *studies in the Aramaic Edicts of Aśoka,* Calcutta 1984). The vast territories of the Maurya empire were probably conquered by Chandragupta Maurya and Aśoka annexed Kalińga to it.

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The second condition, for keeping the empire united, was to have a well-organised, efficient and dedicated band of officials who would be executing the king's benevolent plans and programmes and other well-measured, well-thought-out policies. And most amazingly, king Piyadasi, the Beloved of the gods as he used to address himself so fondly, was quite fortunate in having well-organised efficient bands of high officials who took up the cause of the king in right earnestness and helped him in bringing the whole country under his charismatic influence. He was also quite successful in improving upon the existing administrative system by bringing in some innovatie measures, keeping always in mind the needs of the subject, the needs of the time. *Rajukas (Rajjukas), Raṭhikas (Rāshṭrikas), Yutas (Yuktas)* and *Prādesikas (Prādeśikas)* were all there who were primarily responsible, this way or the other way, for preaching Aśoka's doctrine (Erragudi, Nittur, Rajula-Mandagiri and Udegolam versions of MRE II). Preaching of Dhamma and supervising welfare works and judicial procedures were among the duties of the trusted and efficient Rajukas *who were* "placed in charge of many hundred thousand of lives" (PE IV, RE III & PE VII). The king was single-mindedly obsessed with his Dhamma. The degree of his dedication in this regard is not only unfathomable but simply astonishing keeping in mind the traditional approach to monarchism and the well-developed and elaborate state-policy as enumerated and propounded by Kautilya in his Arthasastra.

The *Rajukas, Yutas* and *Prādeśikas* were asked to go on tour every five years for performing their duties and also for preaching of Dhamma (RE III, PE VII). The *Parisā* (Council of Ministers) was made responsible for directing the *Yutas* regarding observance (of the royal instructions) according to (the king's) reason and text (of his edicts) (RE III). The king himself was always available for receiving from reporters (*paṭivedakas*) information on the affairs of the people for the promotion of whose welfare he made utmost exertion (RE VI).

The appointment of Dhamma-mahāmātās or Dharma Mahāmātras was indeed a grand administrative step taken by Aśoka. They were responsible for establishing Dhamma among all sects, looking after the welfare and happiness of different peoples (including the Yavanas, Kaṃbojas and Gadhāras) and subjects (including bhaṭas, amayas, brāhmaṇas, ibhyas, anāthas, and vṛiddhas) and supervising proerly certain judicial and administrative works (RE V). They were also asked to look after the affairs of the (Buddhist) Saṅgha, Brāhmaṇas, Ājīvīkas, Nigranthas and others (RE VII). They were employed everywhere, in Pāṭaliputra and outlying towns and in the house-holds of Aśoka's brothers, sisters, and realtives (RE V). Another class of officials connected with the preaching of Dhamma was engaged for distribution of charities on behalf of the king and queens and also princes (PE VII). Aśoka ordered the Anta-mahāmātras and in fact all officiers of the highest middle and lowest ranks to

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conform to his instructions and to practise Dhamma (PE I). The king took his Dhamma so dear to his heart that he remained a life-long zealous propagator of it keeping always the subjects informed of his humble yet resoulte intentions. He erected pillars of Dhamma bearing his edicts, appointed, inter alia, Dharma-mahāmātras and arranged for proclamations of Dhamma (at least some of which were incorporated in his edicts on rocks and pillars) PE VII). His rule (vidhi) of action was administration according to Dhamma (Dhammena Pālanā) (PE I). This elaborate system of appointing all these officials at different levels of the state for the cause of his Dhamma throughout his empire does definitely reflect his great administrative ability to hold the reign of the empire in a very strong and sustained manner.

The third condidion for unifying a country sould have been a commom language serving as a lingua-franca amongst the people who would be understanding the state's policies, plans and programmes and preparing themselves to execute them accordingly. That Prākrit with its regional variations served as a common language during Aśoka's time is quite clear from his various Rock Edicts. The greater part of Aśokan edicts were written in Brāhmī which as early as 3rd century B.C. represented a fairly elaborate script system.. The manner of engraving letters on stone (the most notable feature being their round shape) is an indication that the practice of writing on soft materials had already existed over a long period of time. Two very interesting terracotta fragments representing people learning the Brāhmī alphabet (they hold in their hands a board coverd with Brāhmī letters) indicate the spread of writing (one specimen is in the collection of the National Museum, the other one is in the personal collection of Acharya Bhavan Dev). The Kharoshṭī script and the Prākrit language were used in the north-west India and the provinces, west of the Indus river, which had been, at one time, part of the Achaemenid empire, preserved the tradition of the Achaemenid chancellery—the use of the Aramaic script. As shown by the Kandhar inscription royal rescripts were written also in the Aramaic script. Kharoshṭī emerged from the Aramaic script under the influence of Brāhmī. For the population of Arachosia who spoke Greek, royal scripts were translated into Greek. The vast majority of the Asokan edicts were written in Prakrit. An analysis of the royal rescripts led scholars to the conclusion that their texts were usually drafted in Pataliputra, the capital of the empire, whence they were sent to various parts of the country, where local scribes often introduced into them vernacular words and expressions. The western provinces must have had scribes who knew Prākrit as well as the Aramaic language. Moreover, it can be presumed the the local population of that area spoke these languages and possibly Greek too.

So it is clear that Aśoka knew about the needs to be fulfilled for launching his policy of Dhamma through which he had dreamt of unifying the land. The Kaliṅga war was perhaps

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predestined to take place. The prevailing condition in socio-religious spheres must have been of such terrible magnitude that some measures were required to be taken. The rigid Brahmanical attitude towards life, towards society, towards individuals, perhaps made the basic values of life meaningless and full of sacerdotal supermacy. The Kaliṅga war served as a turning point. By undertaking the policy of Dhamma Aśoka made everything clear to the people as to what was needed for the country. With a powerful administration backed by a strong military force Piyadaśi Aśoka mobilized all his spiritual energies with absolute dedication to propagate his new Dhamma. Crystalisation of idea about the constituent elements of Dhamma is evident from several edicts. Dhamma is clearly defined in PE II as consisting of freedom from sins (or few sins) *(apāsinave)*, many virtuous deeds *(vahukayāne)*, compassion *(dayā)*, liberty (or making gifts) *(dāne)*, truthfulness *(sache)* and purity (of mind) *(sochae)*". To these qualities PE VII adds "gentleness" *(madave)* and "goodness" *(sādhave)*. (PE VII stresses on the qualities like liberty, compassion, truthfulness, purity (of mind), gentleness and goodness). According to RE VII people of all sects should be obligated to have 'self control' *(sayame)* "mental purity" *(bhāva sudhi)*, "gratefulness" *(kiṭanātā)* and "firm devotion" *(diḍhabhatitā)*.

PE III enjoins that a man should know and guard himself against those (passions) which lead to sin, viz. fierceness *(chaṁḍiye)*, cruelty *(niṭhuliye)*, anger *(kodhe)*, pride *(māne)* and jealousy *(isyā)*. Asoka's Dhamma encouraged the 'growth of the essence' *(sāravaḍhi)* of all sects. The Shahbazgarhi version of RE XII states that "the growth of the essence [is possible] in many ways. But at the root of it is that (which is) restraint of speech". How beautiful it is when he says that "other sects should be duly honoured in every way (or manner). By doing this one promotes his own sect and benefits other sects as well. By acting otherwise one injures his own sect and does harm to other sects. For whoever praises his own sects (or) disparages other sects, all out of pure devotion to his own sect— and why so? with a view to glorifying his won sect, he again, by acting thus, injures severely his own sect. Therefore self control alone is meritorious. How so? They should hear and hearken the Dharma (doctrine) of one another. This is the desire of the Beloved of the Gods. What is it? All sects should be versed in many lores and stick to virtuous deeds".

Thus by his policy of Dhamma Aśoka advocated for practice of piety, truth, non-injury, non-killing, self control, good behaviour, obedience to superiors, firm devotion and amity between sects. Aśoka, however, did not altogether eschew violence at least in state polities. It is stated in the Shahbazgarhi version (and perhaps in the Mansehra and also substantially in the Erragudi editions) or RE XIII that the "forest [folk], existing [i.e. living] in the domain (vijita) of Devānaṁpiya ..... are told of the power which Devānaṁpiya [possesses] inspite of repentance in order that they may be ashamed [of their wrong doings]

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and may not be killed. For Devānaṁpiya wishes all creatures non-injury, self-control and impartiality in violence (*samachariyaṁ rabhasiye*)". SRE II indicates that Aśoka promised the unconquered borders that they would be forgiven as far as it is possible to forgive. SRE I & II claim that Aśoka considered all men (i.e., subjects) as his children. Just as he desired his children to be associated with all kinds of welfare and happiness in this world and the next so also he wanted the same for all men. He banned sacrificial slaughter of living beings. He also drastically reduced the daily slaughter of animals at the royal kitchen. In his own empire and in the neighbouring kingdoms Aśoka arranged for medical attendance to men and also to beasts. Useful medicinal herbs, roots and fruit (trees) were imported and planted wherever they were not available (RE II). For the benefit to men and beasts trees (including banyan trees and mango-orchards) were planted and wells were dug at intervals of every half a krosa (or eight krosas). Rest houses or market places were built and watering sheds were erected (RE II and PE VII).

Aśoka's Dhamma cannot be considered to be the same as Buddism. It cannont be interpreted merely as consisting of a list of duties for laymen as prescribed by Buddhism. It also served as a moral code or an essence of all religions or an ethical social conduct. It is thus a political philosophy based on social and religious (primarily Buddhist) codes and ancient custom rule (porāṇā pakitī) in order to maintain social order, religious harmony and communal and political peace in a vast empire ruled over by a powerful paternal benevolent despot looking after his subjects as his children and claiming from them complete submission. The socio-political system as envisaged by Aśoka's Dhamma has two parties—the subjects and the king. The subjects should, inter-alia, practise non-violence, good behaviour, self restraint, virtuous deeds, liberty and very little sinful acts and observe compassion (for all), purity in mind, goodness and gentleness in behaviour, reverence for brāhmaṇas, śramaṇas and all sects and firm devotion to the king's interest. The other party, the king, preaches the concept of Dhamma and uses the state-administration for disseminating it. He is responsible for doing various virtuous deeds for the welfare of the people and animals of his empire (and even of neighbouring kingdoms). The king observes *inter alia* compassion and pardons the crimes committed by his subjects as far as they are pardonable. He preaches and observes non-violence in general and impartiality in case of unavoidable violence. It the subjstcts do their duties they are assured of welfare and happiness in this world and in the next (i.e., in the heaven). The king publicly claims that by preaching and practising Dhamma he is discharging his debts to his subjects (RE VI) and even to the people living beyond the borders of the empire (SRE II). The system, as outlined above, could, if properly followed, ensure happiness of the subjects and maintain the integrity of a vast empire ruled over by a well intentioned patriarchal ruler who wanted to observe

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non-violence, liberty and compassion without lossing his political authority. The system was especially applicable to a large empire plagued by religious animosities, fissiparous tendencies among certain classes of subjects and inadequate communicating facilities. This brilliant political philosophy based on social and religious (primarily Buddhist) codes and ancient custom was Asoka's unique contribution to Indian polity.

Brute force cannot unify a nation. It cannot also be achieved by countless proclamations, legislations, reforms, codes or principles even if a state is ruled by a democratic form of government. However, these could be achieved by an administration controlled by a ruler having a heart and a mind, full of compassion, piety, determination and devotion.

The fundamental values of life should be honoured and respected. The ruler should be practising what he preaches for the good of the country. To motivate the people into dedicating themselves to the cause of the nation we must follow the path as shown by this noble-hearted emperor.

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ATTITUDES TOWARDS TRIBES AND FRONTIER PEOPLES

ALOKA PARASHER SEN

In writing about the social history of any period one often forgets to write the history of tribal and foreign groups assuming that they were marginal to the mainstream social and political fabric. In this paper we shall focus on a study of these groups especially in the context of the fact that Mauryan cultural and political influence had spread over most parts of the subcontinent. It has only recently been recognized that elements of regional variations and disparate local situations have to be taken into account in order to understand the complexity of the social interactions and exclusions on the subcontinent during this early period of our history. On the particular theme of this volume it will enable us to analyze the difficulties faced by the dominant state in achieving integration while, at the same time, recognizing that regional and frontier areas inhabited by these groups were not the same as before the contact with the cultural and political centre of the Mauryan state. In the process of analyzing these aspects of social interaction it would be best to understand India as a civilizational entity rather than in terms of the essentials of a Nation State as we understand it today. In other words, we see the interplay of both cultural notions of defining the 'Other', *i.e.* tribes and frontier peoples, and the political questions of how to handle these people. This task was not unique to the Mauryan times and has been something that Indian civilization has constantly handled and is with us even today.

The physical and cultural regions of the subcontinent have undergone changes over time. Whereas the earliest archaeological cultures in terms of the stone age communities occupied almost all geographical niches except the vast plains of the Indus and the Ganges Basins,[1] historical periods see the steady and gradual acculturation of the various river valleys which determine the genesis and growth of various phases of Indian civilization. B. Subbarao has mapped for us areas that were perennial nuclear areas of attraction *vis-a-vis* those that were areas of relative isolation and areas of isolation.[2] The last two were substantially those areas which were either desert areas or those covered by substantial forests. In fact, it is these forest cover areas that emerged over long periods of time to be the habitat of the various ethnic tribes of the subcontinent.[3] The horizontal spread of various political, economic and technological endeavours disturbed the so-called pristine sanctity of these areas from time to time but, they did not destroy them completely. Secondly, political expansion in

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particular brought the centres of power to the frontiers of kingdoms which naturally generated conditions of imposition and conflict. The period of Mauryan rule is one of the first in Indian history which sees how the dynamics of these changes took place. We turn to examine these changes in the context of the general attitudes towards tribes and foreign peoples on the subcontinent before Mauryan rule especially in the context of the general distancing of these groups in the Brahmanical literature.

In theory, drawing upon data from the *śāstras,* it is simple to ascribe social differentiation on the subcontinent due to cultural reasons as people called *mlecchas* were not encompassed in the *varṇāśramadharma.* However, it would necessarily be erroneous to visualize the cultural system as static both in terms of its ideological moorings and the organic functioning of society in early India. In the present focus of our discussion we argue how political notions about tribes and other people who were called *mlecchas* were only partly determined by the *śāstra* injunctions. This is pertinent particularly in the light of the fact the prime duty of the king in ancient India was meant to be the maintenance of the *varṇāśramadharma.* Despite this well-accepted responsibility of maintaining order, the *Brāhamaṇa* advisers who were closely allied with the *kṣatriya* princes and kings, and who were basically responsible for the formulation of the *Dharmaśāstra* injunctions concerning the avoidance of *mlecchas* in general, do not, in their treatises on Rājadharma, advise them on the subject of politically discriminating against them or their territory. Simultaneously, the *Dharmaśāstra* and the *Arthaśāstra* also advise the king to accept as valid those customs and usages of tribes, families and organizations that do not challenge the *smṛti.* The validity of these customs would of course, ultimately be judged by the *Brāhamaṇas.* Nevertheless, in ultimate analysis political expediencey emerged as one of the potent factors in culturally accepting or rejecting such groups.

Though it is clear that the *Dharmaśāstra, Arthaśāstra* and brahmanical jurisprudence in general, excluded the *mlecchas* from its scope, they also did not bother to note the laws and social codes prevalent in *mleccha* society/societies or, compare them with their own. All information about the cultural behaviour of their social customs or their economic status as therefore, pejorative. It would be wrong to suggest that there was no awareness of their customs and behaviour among these early writers. Even the foreign writer Megasthenes of the third century B.C. observed that the Indians were surrounded by barbarian tribes who differed from the rest of the population. He mentions the existence of 118 peoples but he does not seem to attach any importance to regional differences among them.[4] A significant exception among the brahmanical writers of the centuries B.C. was Kauṭilya who has mentioned certain features about a *mleccha* custom which are not repeated elsewhere. Kauṭilya forbade the members of the four *varṇas* to sell their offspring and further noted that it was not an offence for the *mlecchas* to do so.[5] There is no indication, however, to the identification of the *mlecchas* in this instance though Kangle is of the opinion that

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mlecchānām would seem to denote foreigners as well as tribals not absorbed into Indo-Aryan society.[6] If we accept that he wrote during the Mauryan period or so, he could have been referring to the system of slavery among the Greeks who in India were known as the Yavanas or Yonas. A Buddhist text, the *Majjhima Nikāya* mentions the custom among the Yonas and Kāmbojas where an *ārya* could become a *dāsa* and vice versa.[7] Kauṭilya's injunction, like most brahmanical ones, was meant for the *āryas* but it is significant to note that their behaviour was not spoken of in derogatory terms.

That there was a greater awareness in the *Arthaśāstra* about various tribal groups is known to us from the different contexts in which the term *mleccha* is used by the author. There was a clear contrast between those *mlecchas* who were known to belong to a group, probably tribal groups, and therefore, collectively called *mlecchajātis* and those that were simply called *mlecchas* as in the case discussed above. The latter form alluded to foreigners in India who were not necessarily settled in identifiable communities. The former were understood in two broad categories, those whose abilities could be used by the state[8] and those who were menace to the state and were often described by the adjective *aṭavi*.[9]

Despite the fact that the *mlecchas* as tribes and foreigners were culturally distanced in the literary traditions of early India, we have imformation from both inscriptions and literature that they were readily accepted as political allies. Most ancient Indian were actuated by the ideal to the Cakravartin to which they applied political expediencey to determine their policy of conquest, pacification or total avoidance of areas inhabited by tribes and frontier people. In the *Arthaśāstra,* Kauṭilya defines the *cakravarti-kṣetra* or the sphere of influence of the Cakravartin as the land which extends north to south from the Himalaya to the seas and measures a thousand *yojanas.*[10] This sphere of influence in Puranic terms corresponded to the whole of Bhāratavarṣa, *i.e.*, the Indian subcontinent.[11] There is no doubt that the Cakravarti ideal reflected conventional ideas about an Indian ruler's sphere of influence and, in part it was an ideal that was never achieved, expect perhaps by Aśoka.[12] We do not go into these details for the present suffice to say that the Mauryan monarchs were aware of these ideas. Knowledge of the subcontinent had indeed increased during the period of their rule. By the time that Aśoka came to the throne a strong and well established government had prevented foreign invasions and his policy of Dhamma had kept all elements of the population, including tribesmen and foreigners on the borders, temporarily pacified. All this was done against the background of a certain attitude of power and control that needs to be emphasized upon in the present context.

The Buddhist edict discovered near Bhabra[13] begins with the phrase "The magadhan king Piyadassi" where 'Magadhan' is probably an ethnonym since most Indian kings used to derive their names from the names of their capitals or, of the races to which they ethnically belonged.[14] However, in two cases even though the term Cakravarti has not actually been

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used, scholars suggest that Aśoka was what the Buddhists called Cakravartin[15] or, the master of the earth. In referring to the activities of the Dhamma-Mahāmātras in the Dhauli version of the Fifth Rock-Edict, the emperor Aśoka claims to have employed them throughout the earth...*sava puṭhaviyaṁ.*[16] Secondly, more pertinently in the present context in Rock Edict XIII Aśoka declared "Even when he is wronged, the Beloved of the Gods believes one must exercise patience as far as it is possible to exercise. As far as the forest (tribes) which are in his Empire are concerned, the Beloved of the Gods conciliates them too and preaches them. They are even told that his remorse is the reason why, so that they repent and do not kill any more."[17]

This is an important statement where Aśoka after declaring himself moved by the horrors of the Kalinga War, as is well known, indicates his desire to renounce violence and more importantly, the statement "the Beloved of Gods thinks that one must exercise patience as much as it is possible to exercise patience" suggests an assertiveness to the king's orders which should apply everywhere even among the populations who live on the fringe of the Empire under the threat of violent repression. It is interesting that in the Kandahar Greek inscription apart from laying stress on the practice of piety and self control etc., B.N. Mukherjee writes that "an important element of the concept of Dhamma was the subjects' firm devotion to the king's (*i.e.* Asoka's) interest".[18] This thus clearly indicates that the messages that were meant for people on the borders had to not only be effectively communicated to them in their own language, but also that they had to be firmly told about obedience to the overall emperor. The same idea returns in a less menacing form in Rock Edict III and V where the term "Everywhere in my Empire" makes the repeated assertions that orders of the king were valid throughout the Empire, without exception and points to the fact that the functionaries of Aśoka considered him to be an Universal sovereign. The authority of the Mauryan state under him was therefore in no way diminished and tribes and border people were made to understand this through his various edicts.

Kauṭilya within his own ideological world view was also most emphatic about the king's basic responsibility to protect the welfare of his subjects, *i.e.,* to protect them against enemies and calamities, help the minors, the aged and persons in distress etc.[19] But, in particular, it was the duty of the king to protect by force of law the social order founded on the system of *varṇas* and *āśramas.*[20] Though the *Arthaśāstra* is often characterized and described as a text with a secular and realistic outlook, it urges the king to maintain the brahmanical system of social order prevalent during his time. Furthermore, after conquering the earth, the conqueror was advised to enjoy it by maintaining the social order in conformity with the *varṇāśramadharma.*[21]

Undoubtedly, there was not a single age when the ideals of the *varṇāśramadharma* were fully enforced. It was particularly difficult to do so in times of stress such as during

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foreign occupations,[22] wars and conquests, and when new settlements, especially in tribal areas, were established. But, the total disregard for this order, says Kauṭilya, was not to be tolerated as that would lead to *varṇasṁkara* which might result in the destruction of society, and, by implication, of the State itself.[23] At the same time, from on early period, it was laid down that the customs and usages of other countries, families and castes could be followed, but only if they did not oppose the teaching of the *Veda* and the *Smṛti*.[24] In the *Arthaśāstra* the state was likewise required to maintain as valid every local usage of country, tribe, guild or village.[25] Kauṭilya was thus clear in recommending to the conqueror the maintenance of the laws and customs of the conquered state. These injunctions clearly indicate the problem of regional differences that faced the ancient Indian monarch. We now turn to material that elucidated political solutions to the problem of the existence of tribes and frontier people as almost permanent peripheral groups in early Indian society.

Though Kauṭilya conforms to certain brahmanical ideas, he is unique in that he pronounces for the first time the legitimacy of the state to aggrandize almost anything concentrating on military, political and economic means of aggression. Therefore, as far as he was concerned every means to maintain the absolute power and strength of a king was regarded proper. It is from the sixth book onwards that the writer concentrates on military and political methods of aggression which rests on the ground of expediency alone with no thought given to respect for morality or political ethics.

The king was warned that border areas of the kingdom, where *mleccha* forest tribes together with bands of robbers were found, were to be considered that of enemies.[26] In this verse it was specifically indicated that the reference was to land on the frontier *(pratyanta)* where there were many forts *(bahudurgāḥ)*. This can be interpreted as, first, that these forts gave shelter to bands or groups of thieves and *mleccha* forest tribes[27] or, secondly, that the territory concerned was reputed to be infested with gangs of thieves and *mleccha* forest tribes and therefore, forts were built on the border to defend the land. According to the latter interpretation there is a certain degree of permanency implied in the habitat of these groups. This passage of course has to be understood by us in the light of other measures given by Kauṭilya for the settlement and pacification of conquered territory.

As part of this policy for the defense and settlement of the countryside, Kauṭilya gives a suggestion that does not completely nullify the second alternative mentinoned above. He points out that the king should erect fortresses on the frontiers of his kingdom under the command of frontier chiefs.[28] The territory between the frontier and the fortresses was to be guarded by trappers *(vāgurikas)*, Śabaras, Pulindas, Caṇḍālas and forest-dwellers *(araṇyacarā)*. The term *araṇyacarā* for forest-dwellers was not qualified by the designation *mleccha* as the term *aṭavī* is in the earlier passage. The contrast between *araṇyacara* in whatever sense we understand the term, and the wild and savage forest tribes, *(āṭavika)*well

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entrenched in the jungle fastnesses who were ostensibly a nuisance to the State, was definite and clear from the political angle. The former, it is suggested could be trusted and allowed to guard the frontier of a particular kingdom.

As far as the *aṭavi* or *aṭavikā* tribes were concerned, Kauṭilya elsewhere points out that they could be a source of danger to the State. They were said to be well organized and brave, practically autonomous and without scruples in matters of looting and killing.[29] This may be one of the reasons why *mlecchaṭavi* tribes were declared to be no less serious than enemies of the State. In a completely different context a forest chieftain was often mentioned as one of those capable of seizing the throne from the ruler.[30] It is quite clear that the separateness of forest tribes from civilized society had come to be regarded as fundamental.

The term *mleccha* covered partly these forest tribes though there were *mlecchajātis* (communities) of various kinds.[31] As a solution to the threat that *mleccha* communities or forest tribes around frontier areas, Kauṭilya advocates that, in conquered territory, the king should cause a change of residence of professional thieves, of *mleccha-jātis* and of chiefs of forts, country and army.[32] It was part of a wider policy of settlement and pacification of the new territory so that the ultimate control lay in the hands of the king. In discussing the techniques of breaking the *saṁghas* in Book XI of the *Arthaśāstra,* D.D.Kosambi observes : "...the tribal life and production...whether Aryan or not...were systematically converted into a caste-ridden peasantry conditioned not to bear arms, nor to unite in opposition to the state."[33] As far as *mlecchajātis,* other than forest tribes were concerned, they were also a potential threat to the existing social order outside the control of the *brāhmaṇas* and *kṣatriyas.*

Kauṭilya's policy towards *mlecchas* and primitive tribes was not followed by all ancient kings. In fact, the term *mleccha* does not occur in the Aśokan inscriptions. Aśoka, however, makes a clear distinction between foreign peoples on his border and the tribes in the interior on the one hand, and his (other) subjects on the other. In Rock-Edict XIII there is a list of the Yonas, Kāmbojas, Nābhakas, Bhojas, Pitinikas, Āndhras and Pālidas, who were considered as border people but within the territories of the empire.[34] According to Senart some sections of the population enjoyed a special status when compared to other groups before Aśoka and he therefore, wanted that his orders were effectively obeyed in far flung parts of his empire. The text of Rock Edict XII reads : "It was I who, when I had been consecrated for thirteen years, first appointed officers of Dhamma. They are concerned with all sects...for the welfare and happiness of those who are devoted to Dhamma among the Greeks, the Kāmbojas, the Gandhāras, the Pitinikas and the others people of the West... The Beloved of the Gods has gained this victory here and on the frontiers to a distance of six hundred *yojanas* where (Greek kings) reign and in the south over the colas and

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Pandyas...likewise here in the imperial territories, Yonas and Kāmbojas, Nābhakas, and Nābhapanktis, Bhojas and Pitinikas, Andhras and Parindas, everywhere the people follow the Beloved of the Gods teachings of Dhamma".[35] Nearly all the well-known versions of this Rock-Edict from which the above extracts were taken engraved at the confines of the Empire ; a special message for the borderers that they had to come to line with the Dhamma of Aśoka. This edict has to be read along with Rock-Edict XIII mentioned above which warns the forest tribes to give up violence. This edict tells us of the moral crisis which followed the Kalinga conquest.

Normally Aśoka uses *vijita,* which literally means 'a conquered (territory)', to represent his dominions.[36] Only once, in referring to the above people is the term *rāja-viṣaya* or 'royal territory' used.[37] There can be no doubt that they were included in his empire. Raychaudhuri considered the above people to have enjoyed a status midway between the provinces and the unsubdued borderers.[38] Fussman points out in the analysis of the Greek translation of Rock Edict XII at Kandahar that some careful adaptations were done in that officials who were to carry out the message of Dhamma were not mentioned. Thus he writes that "if these various agents of royal power are not mentioned at Kandahar, it is probably beacuse some of them did not exist or because their activity amongst the Yona and Kāmboja was more discreet than in the rest of the Empire."[39] There is no doubt that Aśokan inscriptions drew a distinction between people who lived around his frontiers and those that were the forest tribes. As discussed above Aśoka did make attempts to conciliate the latter also but, in the same edict, warned them that even after the remorse suffered by him from the Kalinga war, the king was still powerful.[40] Since these lines occur after the description of the suffering experienced at Kalinga, it appears that Aśoka did not want to subdue these forest tribes by force and with bloodshed, but wanted to be firm with them all the same.

In the Second Separate Edict, Aśoka makes an appeal to all unconquered people on his borders not to fear him and to follow the Dhamma initiated by him.[41] In the same edict the Dhamma mahāmātras were advised to inspire confidence among the borderers and also induce them to practice the principles of morality laid down in his policy of Dhamma. The edict itself was written and erected to remind the officials of the State of their duty.[42] Aśoka's aim was to win over their confidence and spread among them the principles of his Dhamma. There was neither any reference to the unconquered borderers or the *aṭavi* (forest) inhabitants as *mlecchas.* Aśoka took no direct steps to antagonize the *brāhamaṇas* in any respect. On the other hand, in one of the edicts he has proclaimed that they should be held in respect.[43] It is pertinently noted in Rock Edict XIII that *brāhamaṇas* and *śramaṇas* exist every where except in the Yona country.[44] But in his task to govern an empire with diverse elements he did not have to conform to the traditional society's norms about marginal groups like tribes and foreigners. Some parts of the empire were prone to tension. Thus

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in the north western parts of his empire for instance, special efforts were made by him to inscribe his messages in Aramaic and Greek thereby implying that a large part of his subjects living in this part of the subcontinent were of Iranian, Indo-Iranian, Greek, Greaco-Indian and Greaco-Iranian origin.[45] These were traditionally understood in brahmanic texts as being part of the *mleccha* population. At the same time, the new Aśokan concept of the state did not fully integrate them though attempts through certain ideological endeavours were indeed made.

The tenor of Kauṭilya's policy towards tribes and frontier people was, however, different. The administration of the State, Kauṭilya continually emphasized, must be controlled with an efficient and centralized machinery. The espionage system occupied an important place as one of the means to achieve this. Kauṭilya based his advice on the brahmanical system but saw no harm in using the various types of *mlecchas* for political purposes. He recognized, however, the political advantage to be gained from keeping tribes in general contented. They could be used effectively in campaigns and deployed in such a way that would prevent them from resorting to plunder and arson. Secondly, they could be used as spies against the enemy.

Thus the *aṭavibala* or troops from forest tribes formed one of the six kinds of troops at the disposal of the ruler. Such troops were under the command of their own chieftains and it was recognized that they were likely to be more interested in plunder than fighting. It was further stated that alien troops commanded by an *ārya* were better than forest troops.[46] and, if on the path of a particular king's army there was an army of wild tribes then, he was to use only his army of wild of tribes against them.[47] While it was admitted that a whole army of forest tribes would pose a threat at times, the king was openly advised to secure the help of certain *mlecchas* for his own personal needs. In cases where the king had become weak, he was to reinforce his troops to secure the services of heroic men from bands, robber groups, *mleccha aṭavikājātis* and secret agents. Their services were further to be deployed in inflicting harm upon the enemy.[48] In another context, on assassinating a weak king it was *mlecchas* who were supposed to carry out the killing. Leaders of *mleccha* forest troops were to take cover in places, and ambush and kill the king.[49]

There are other instances where *mlecchas* were to effectively be used as spies. In one case, in the section on the use of secret practices, the destruction of the enemy troops was considered justified by the statement that it was "for the sake of protecting the four *varṇas*...against the unrighteous."[50] One of the secret methods was that "approved men and and women of *meleccha* communities, disguised as humpbacks, dwarfs, *kirātas*, dumb or deaf persons, idiots ot blind persons, in an appearance credible as to country, dress, profession, language and birth" were told to introduce poison into articles used by the enemy.[51] The ability of the *mlecchas* to perform such duties was perhaps well known and

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accepted by the people at large. *Mlecchajātis* were also trusted as spies inside the palace of the king.[52]

Having discussed two major sources for the period of Mauryan rule in terms of their attitudes towards tribes and frontier peoples, we return to the question of looking at these attitudes in the light of recent interpretations of the Mauryan state. According to existing scholarship, that is the most commonly accepted text book definition of the Mauryan era, the Magadhan empire has been understood as a centralized bureaucratic empire.[53] These empires are said to usually conquer new territories by the sway of superior military prowers and establish order in a situation which was otherwise full of turmoil, strife and unrest. In new territories there was always the situation of separatist tendencies emerging but these were curbed by the strength of arms. In this definition it was absolutely essential for such empires, in order to survive, to monopolize and mobilize various resources, those of economic raw materials and manpower in particular. This was supposedly done with the help of an efficient administrative machinery. The empire was therefore all powerful and in this interpretation there is hardly any scope to look at social differentiation which cut across regions and communities other than traditional divisions of family, kindhip and old status group known in the core areas of the empire.

In the recent writings of Romila Thapar[54] we are introduced to a new way in understanding the control the Mauryas exerted over different regions of the empire. That Aśoka was only known by the simple title *rājā magadhe* in the *Purāṇas* could perhaps indicate, in her opinion, that effective Mauryan control lay in Magadha which she then defines as the metropolitan state. It was this metropolitan state, she argues, that initiated conquest and control of the other areas defined in terms of the 'core' and 'periphery'. These were controlled through various mechanisms. In other words, a uniform centralized administrative machinery was not used to control all regions but it varied depending on the needs of the metropolitan state. In fact, it is argued that the necessity for the Mauryan territorial expansion was really entered upon because more resources were needed to support the metropolitan areas. If these resources could not be found in the core areas it could lead to expansion and exploitation of the periphery as well. In this interpretation of the Magadhan empire under the Mauryas we are given an opportunity to look deeper into the complex relationship between the dominating and the dominated regions of the empire which were held together not merely by military strength.

Around the same time, Gerard Fussman in an article[55] questioned the hypothesis that the Mauryan empire was only dependant on the efficiency of the central administration and the armed forces. He suggested that scholars who build this image tend to lay great stress on the use of the *Arthaśāstra*. He, on the other hand, does not use it but rather, focuses on Megasthenes' account and the Edicts of Aśoka. After going through Rock Edict

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XIII and V in particular he says : "in these border regions, it would therefore be an exaggeration to talk of administrative centralization"[56] On the other hand, he explains in detail the possibility of there having been "intermediate administrations" that were strong. The reason given for this interpretation is that communications between Patna (Pataliputra) and the provinces would have otherwise taken a very long time for effective administration to be possible. There are several other reasons why he feels that the degree of centralization of the Mauryan empire is often over-rated to conclude that the Mauryan empire "was made up of territories administered directly by the Crown ; from conquered or won over kingdoms, of which the ruler had been made to pay tribute but was allowed to reign on ; from tribes/ republics with some degree of internal autonomy."[57] In this interpretation therefore, there was more liberty the further away the region was from royal power so that to put into practice the king's orders was only possible when it fitted into the local reality. This does not undermine the fact that the Mauryas as a central power were trying to bring various frontier people and tribes under their power. Depending on the place and circumstances there was some success but this did not apply to all parts of the subcontinent uniformly.

Against this background of documentation and interpretation we can suggest that however powerful an empire, it always had dificulties in containing diverse ethnically powerful populations. Further, the compulsions of effectively trying to integrate different populations of the subcontinent into one political system presented many challenges. These were met by exerting certain well-known strategies and some new methods which combined political considerations with social and cultural ones.

It has, however, been difficult to conclude that social entities in the various regional contexts were totally transformed as a result of the Mauryan intrusion. However, certain changes were initiated in the periphery which became the nucleus for developments during the later period. Also, since the State did not replicate the dominant cultural attitudes of the times in their relationship with tribes and frontier peoples, a greater awareness about these groups is definitely depicted in the sources of the period. This necessarily depicts more interaction and mobility rather than absolute rejection and isolation of these groups.

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DISINTEGRATION OF THE MAURYAN EMPIRE

JAYA BHATTACHARYYA

The reign period of Aśoka from *c.* 273-236 B.C. forms a glorious epock of Mauryan Empire of ancient India. Aśoka, who ruled for 37 years had a large empire extended from the foot of the Hisndukush i.e. from the Peshawar to the borders of Tamil country in the south and from the Arabian sea in the west to the Bay of Bengal in the east as is, evidenced from the distribution of Aśokan edicts.

As the reign period of Aśoka is full of eventful activities, the history of the successive period of the Mauryan dynasty after Aśoka is equally unstable and shrouded in obsurity after aśoka.

It is very difficult to have a correct picture of geneaology after Aśoka from the confusing accounts of the Purāṇas and other literary sources like Rājataranginī, Divyāvadāna and Jaintexts. The inscriptional evidence only refers Tivara[1] as the son of Aśoka and the existence of one Daśaratha[2] possibly the grand son of Aśoka is confirmed by three short dedicatory inscriptions bestowing on the Ajivīkas-caves in the Nāgārjuni hills in Bihar. The purāṇas are also unanimous in stating the fact that Bṛihadratha was the last scion of the Mauryan family. His historicity is further substantiated by Bāṇa in his Harṣacharita to the effect that Bṛihadratha was assassinated by his general Puṣyamitra Śūṅga.[3]

From the divergent accounts of the Purāṇas and other literary sources,[4] it can be assumed that the successors of Aśoka were not only weak but they were neither capable of strengthening the dynastic power nor they can check the disruption of the empire.

The successive period of half a century is remarkable for the facts that led to the gradual disintegration of the Mauryan supremacy. Although the different stages of the decline may not be ascertained very clearly it can be suggested that with the departure of Aśoka the large and extensive empire was divided amongest his successors. According to Rājataranginī, Jalauka declared him as an independent ruler of Kashmir. Some other successors also established themselves in Gandhāra and Vidarbha as is known from the

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accounts of Tibetan historian Tāranatha and Mālabikāgnimitram of Kālidāsa. The name of Sophāgasenas[5] i.e. Subhāgasena as an independent king of north eastern frontiers has been mentioned by the Greek writer Polybius of *c.* 206 B.C.

Although the Mauryan bureaucratic administration consisted of different non-monarchical tribes and republics, autonomous states and units, it was extremely of a centralized nature with higher officials under the direct control of the ruler.

The Aśokan empire also consisted of big administrative unit, sub-divided into smaller units. The metropolitian city of Pāṭiliputra was directly controled by Aśoka himself[6] where as some of the provinces were ruled by the princes of royal family[7] and others by the high officials or viceroys.

Aśoka, exercised his powers to control the provinces to the best of his ability. But this high officials and viceroys had some power in their discretion which they can accelerate according to the necessity. It is, therefore, the empire was not unitary in nature as it was made out some times. The Mauryan state which was economically very strong, earned its revenue from different sources in the form of taxes on land and agriculture, trade and commerce, industry and communication system etc. as is evidenced from Kauṭilya's Arthaśāstra. A High rate of tax was realised by the Government machinery to run the administration properly.

The discovery of a large number of punch-marked coins that are assigned to the Mauryan period clearly indicates the wider circulation of money and an economic prosperity during the period under study.

The high percentage of alloy contents of these debased punch-marked coins does not surely indicate an economic pressure of the dynasty. On the other hand, the gradual deterioration of the imperial currency system to a certain label was possibly an indication of general acceptance by the people of the country.

The communication system which was also be very important for strengthening the empire was considerably good and connected pāṭaliputra with different parts of the country.

The Mauryan emperors were in possession of a large army.[8] This army not only protected the empire but was also responsible for maintaining the internal peace and order of the country. Inspite of all these, the central administration was quite indifferent to the popular expectations and aspirations.

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The Divyāvadāna[9] and the Aśokavadāna record the repeated revolts of the people of Taxila against the oppressive attitude of the officials during the reign period of Bindusāra and Aśoka. It is to be noted that in order to contain the centrifugal forces of the empire there was an absolute requirement of a monarch with great ability and personality like Chandragupta or Aśoka. But none of the successors of Aśoka was capable enough to check the centrifugal forces and the political unrest of the empire which led to the gradual dismemberment of the Aśokan empire.

The decay of the Mauryan empire was further strengthend by the Bactrain Greek invasion as has been mentioned by the Yugapurāṇa section of the Gārgīsaṁhitā and Mahābhāshya of Pātañjali. Finally the assassination of Bṛihadratha, the last member of the mauryan family by Puṣyamitra Śunga, the Commander-in-Chief of Bṛihadratha, struck the final blow to the Mauryan empire in *c.* 187 B.C. Thus within 137 years the glorious rules of the Mauryas came to a tragic end.

It has been accepted in the past that Aśoka's religious policy was mainly responsible for the downfall of the Mauryan empire. It has been suggested by one school of scholars like Mahāmahopādhyāya Haraprasād Sāstri[10] that pro-Buddhistic attitude of Aśoka and the reaction promoted by the Brāhamaṇas brought about the decline of the empire when Puṣyamitra a Brāhmin, the chief of the Mauryan army assassinated the last Mauryan king Bṛihadratha.

In this connection it may be stated that the religious policy of Aśoka was neither pro-Buddhistic nor anti Brāhmanic and now it is open to all whether this should be accepted or rejected. Other school of scholars are of opinion that his obsession with non-violence (i.e. Ahiṁsā) led to the withdrawal of the army and thus invited the foreign invasions which ultimately damaged the integrity of the Mauryan empire. But his non-violence policy was not of that manner which weakned the army as is clearly known from his inscriptions.

Thus we can finally assess the reasons which demoralised and disjointed the mauryan supremacy. These are the spirit of local autonomy, communication problem, oppressive rule of the provincial viceroys, palace intrigues, internal dissensions along with foreign invasions, as a result India, after the fall of the Mauryan empire in 2nd cent. B.C. witnessed the sub-continent, divided into a number of political divisions. The Yavañas from north western India, the Scythians from Central Asia, the Śuṅgas in eastern India, and the Sātavāhanas in southern India established their suzerainty some time about *c.* 1st century-2nd century B.C.

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THE EXCAVATED MAURYAN SITES IN NORTHERN AND EASTERN INDIA

AMITA RAY

The area of my study is virtually one of the perennial nuclear regions of Indian historical geography, the great northern Indian plain between the Punjab-Rajasthan in the west and the lower Ganga plain in the east, including the central Indian plateau. Orissa also falls within the purview of my study.

A look into the physiographic and cultural landscape of this vast stretch of land would show that it is characterized not only by diverse physiographic features, but infrastructurally, that is from the point of view of basal culture, the region does not follow a uniform pattern. In the pre-Mauryan time this tract witnessed the emergence of different cultural groups of people with varying identities[1]. Yet at the general level, from the fourth century B. C. and onwards, the entire region was thrown open to one power structure rooted in the middle Ganga plain. For a few centuries atleast, the greater part of India, for the first time in history, came within the orbit of a uniform socio-economic political structure. The spark which set off the process of this unified growth all around, was the result of political consolidation provided by the Maurya kings. The emergence of monarchy in Magadha was a major historical phenomenon in the early history of India.

Making an overview of the archaeological materials collected from the stratigraphically demonstrable Mauryan sites it is observed that throughout this region there are certain diagnostic traits recognisable in the material amalgams. These are discernible in the objects connected with day-to-day life. But despite the fact that the Mauryan sites represent a uniform pattern of life throughout the socalled 'Mauryan region', differences are also not insignificant. The primary cause for such differences was its varying physiographic situations depending on attraction, relative isolation and isolation. Thus while attempting to make a survey of the excavated Mauryan sites one should also, take notice of the regional variations. This has been due to the wide spread 'Mauryan region', comprising a number of distinctly different zones, spreading over varied physiographic situations. The ceramic objects, the punch marked and cast copper coins, the script, the terracotta figurines, either time bound or archaic and some other homestead materials are a few diagnostic features which are common to all. Historically, the principal geographic horizon of the Mauryan orbit is the middle Ganga

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plain with an extension up to the Doab, the Upper Ganga Valley, including the Central Indian table land. As the area is extensive and the excavated sites are too numerous we shall confine our study within the key sites only.

II

We begin our survey with the middle Ganga plain, the nuclei of the Mauryan power, and one of the perennial regions is Indian historical geography. The settlement area of this tract comprises of eastern U. P. and the whole of Bihar lying both on the north and the south of the Ganga. The region of Bihar shows a continuous habitation from the neolithic, chalcolithic periods. The expansion of agricultural activities together with certain technologies in the neolithic, chalcolithic phase provided the material base of the Mauryan empire.

Geographically speaking, Bihar has broadly been divided into two parts by the river Ganga—the northern and the southern. These were in fact two nucleus centres of this region[2]. Apart from these two divisions, there is the Gandak—Kosi interfluve spreading upto the Nepalese Tarai. The Chotanagpur plateau because of its mineral resources was always an useful area to the political power of this region. Viewing the archaeological data it has been observed that in all the three geographical parts mentioned above, the sequence of history began from the chalcolithic phase onwards. The systematic expansion of agricultural lands and in more settled form of living were the avenues through which the formation of states was accelerated. Though both sides of the Ganga soon turned into seats of power, the tract lying in the southern side grew up as the hub of the Magadhan imperial power.

Archaeologically speaking, there are in this area a good number of N. B. P. yielding sites, a ceramic industry which is taken to be a contemporary of the Maurya period.

Among the sites located in the southern bank of the Ganga the most important excavated sites are Buxar, Sonepur, Taridih, Rajagriha, Pataliputra, Champa, Vaisali and Chirand. Almost all these sites show a sequence of culture of the chalcolithic—early historic phase. The sites like Sonepur[3] and Taridih[4] located in the Gaya district are archaeologically very important. While Taridih represents a pure neolithic-chalcolithic phase of life in period I, Sonepur shows a flourishing chalcolithic deposit as its basal culture. Period II of Sonepur has yielded evidences of early historic phases including N.B.P.W., iron and copper objects and terracotta figurines of both archaic and time bound female forms. The archaic figurines also bear typical Mauryan characters in the designs of punched, stamped and notched circlets. Taridih, after the neolithic (period I), chalcolithic (period II) and chalcolithic-iron (period III) phases emerges into the historical period in period IV, yielding evidences of materials typical of the Mauryan objects. Houses are typical mud built ones except that ring wells began to appear from this phase. Chirand, after the elaborate neolithic (period I), neolithic-

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chalcolithic (period 1A, II) and chalcolithic (period III) phases enters the historical period (Period IV), yielding evidences in diagnostic traits of the Maurya period—N.B.P. and associates sherds, punch marked, cast copper coins. Interestingly, the phase has witnessed in its upper level brick walls and rammed brick floor along with the traditional mud built houses.

The most important site of the early Mauryan period in this part of the Ganga is Rajagriha[5]. This was the capital of ancient Megadha, during the time of Bimbisara and Ajatasatru. Besides being a metropolitan town, the place was also important otherwise. It is said that Rajagriha was a favourite resort of the Buddha ; Mahavira, the Jain Tirthankara, is also reported to have spent fourteen rainy seasons at this place. Udayin, the son of Ajatasatru, had shifted his capital from Rajagriha to Pataliputra. Since the beginning of this century the site was under excavation and this continues sporadically till the present time[6]. But till now proof regarding the cultural growth of the city remains somewhat indistinct.

There are actually two cities—old and new Rajagriha, old Rajagriha is entirely enclosed by a stone wall. Among the archaeological materials found from this site, the most important one is the fortification wall, built of undressed stones. Within the enclosed area there are some ruins ; the most important of which are the Bimbisara Jail and the Maniar math. New Rajagriha is located outside the hill-girt valley. It also has two sets of fortifications.

On the basis of the stratigraphic sequence revealed through excavations since 1951-63, the site seems to have had three main periods with sub-divisions.

The cultural column at these two places began with the pre-Mauryan phase, that is the black and red ware chalcolithic level. N. B. P. ware is already present from the beginning. Period II and III of Rajagriha shows the maximum concentration of the N.B.P.W. of varied shapes and colours. Other associated objects include a hoard of 14 punch marked coins, steatite amulet, typical Maurya terracotta figurines and a large number of copper objects. The date of this phase has been assigned from 395 to 50 B. C.

On the economic level Rajagriha was an important linking point in the contemporary overland and overseas trade connecting the north of India with the western coast land through the central Indian plateau.

Like Rajagriha, Pataliputra[7] too does not provide any coherent archaeological picture to enable us to know how a village was developed into the famous metropolitan city of the Mauryan political power. Inspite of large-scale excavations through these centuries no coordinated picture emerges. Excavations at Bulandibagh and Kumrahar exposed a Mauryan pillared hall, remains of a wooden structure, punch marked coins, a large number of terracotta figurines both of the archaic and sophisticated Mauryan types including N.B.P.W. of the finest quality and some associated sherds of red colour and black slipped wares.

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Stratigraphically, Pataliputra offers us five consecutive periods from the 6th century B.C. onwards. Period I is N.B.P. with black and red ware chalcolithic remains, indicating the coexistence of two sets of people living together. This period at the lowest level has exposed a mother goddess of the archaic type which goes back to the fifth century B. C.

Of the different ruins taken to represent ancient Pataliputra, the most important are Kumrahar and Bulandibag. Excavations at these places have laid bare definite Mauryan remains, such as a pillared hall, remains of a wooden structure, besides a large number of terracotta figurines, beads, inscribed seals, N.B.P.W. and associated red and black slipped sherds. All the subsequent excavations have exposed five occupational levels, of which period I is reported to have belonged to the Mauryan stratum. Besides the typical ceramic assemblages the archaic Mauryan terracotta figurines, stamped and designed in notched circlets were the other diagnostic remains. Interesting specimens of well modelled sophisticated terracottas have also been brought to light since the recent excavations at Mahabirghar, Sardargally, Begum-Ka-Havilly. The evidence of terracotta pieces found in stratigraphic sequence is interesting for it shows that the archaic terracotta were present from the pre-Mauryan period onwards. But a coordinated picture of Pataliputra on the basis of archaeological remains is still unavailable.

Bhagalpur region, situated on the southern bank of the Ganga was another core area of this time. The evidence of a number of sites over this area shows that it was most populous during the Mauryan period.

Though the area fell within the Mahajanapada of Anga and Champa happened to have been the capital town of this janapada, for all practical purposes this was a part and parcel of the Mauryan empire. In those days Champa was directly connected with pan Indian trade, both over land and over water. The cultural column of Champa, according to the reports, began with the chalcolithic period (period I)[8]. Period II (Maurya) which is quite thick in cultural deposit (according to B. P. Sinha, the excavator), is split into three phases :- the early, the middle and the late. The period exposes an abundance of N.B.P.W. of various shades. The associated black slipped ware occured at this level in prolific number. Other potteries include the black ware, red ware and grey ware. The period is very rich in antiquities, revealing terracotta figurines of the typical Maurya types, ivory and bone objects, beads made of precious and semi-precious stones, copper and glass, including a large number of cast and punch marked coins. Copper jewelleries have also been found in the amalgam, Jewellers' moulds engraved with human and animal motifs are other interesting materials. There is no doubt that during the Mauryan period the city was a prosperous one. It was well fortified with a mud built wall.

Archaeologically speaking, a rich settlement seems to have grown up around the city of Champa during the Maurya period. This is evidenced from a cluster of sites belonging

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to this phase. Oriup[9] is one such flourishing settlement, revealing an abundance of black slipped ware in period I. Period II shows a typical Mauryan assemblage, including the N. B. P. W. and the black slipped wares.

The tract lying on the north of the Ganga, unlike that of the southern bank where concentrated settlement is evidenced from the pre N. B. P. level, provides sporadic evidence of the presence of Mauryan type sites. The site of Basarh located in this zone attracts our attention on the basis of rich archaeological materials[10]. Excavations were taken up in different areas of Basarh. The site identified with Vaisali, the capital of the Licchavis, seems to have emerged in its prosperous stage during the Maurya period. We are told how Buddha visited this place a number of times. The city was surrounded by a fortification wall consisting of a number of towers.

Excavations that had begun in 1904-5 (by Block) and continued till 1962 have exposed five different periods. After a thin layer of P. G. ware (period I) the so called Maurya cultural period began (period II), exposing N. B. P. W. sherds of various shades. Other associated wares are grey ware, black ware, black slipped ware. Silver punch marked and copper cast coins, beads made of precious, semi-precious stones and terracotta figurines of both the archaic and the sophisticated types are other interesting antiquities. The stratum revealed a large number of seals and sealings, atleast some with professional marks, such as trader, banker, guilds and corporation. The discovery of such rich antiquities indicates very clearly the prosperous condition of the city. A stupa is said to have been built on the relic casket of the Buddha during this phase.

III

The area lying in the Indian and Nepalese Terai region was also within the orbit of the Maurya socio-economic cultural horizon. Asoka seems to have given special attention to this part of the country. This is testified by as many as five Asokan edicts. Among the excavated sites of this region the most important are Piprahwa, Tilaurakot, Gunwaria, Lauriya, Nandangarh.

The site of Piprahwa and Ganwaria reveal an interesting N. B. P. W. phase in period II. The N. B. P. W. appears here in a variety of shades. Along with this ceramic are found a large quantity of black slipped and grey wares. Tilaurakot represents in period I black and red, black slipped and N. B. P. sherds. The site is very rich in antiquity. These include terracotta figurines of both the archaic and the time bound types, a few pieces of gold objects, copper jewelleries, including a large number of iron implements. The structural remains indicate the general pattern of houses followed elsewhere. Ringwells seem to have been essential for the secular household architecture.

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IV

While studying the excavated materials of the great middle Ganga plain submontane region it is observed that the rise and fall of this region were determined by the historical forces that operated. The vast table land stretching from the east of Allahabad also falls within the same historical cultural orbit. Of the sites exposed in eastern Uttar Pradesh the most important are Rajghat, Prahladpur, Sravasti, Ayodhya, Sohagaura and Narhan.

Rajghat, the key centre of this region and the capital of ancient Kasi, was then a very important industrial and commercial centre. The site was extensively excavated, revealing a number of successive periods[11]. After a thick black and red ware and black slipped ceramic level, the N.B.P.W. phase (period 1B) appeared. The period is very rich in antiquity, revealing terracotta objects of various kinds, beads made of precious and semi-precious stones and other luxury items used in day-to-day life. The terracotta figurines found from this level were both hand made as well as made of moulds. The hand made figures represent human and naga heads, besides animals like the elephant and the bull. These have a lustrous glaze. The animal bones found from this level belonging to the goats, dogs, horses, asses, fowls, besides cattle, sheep and pigs, are numerous. The extensive use of iron was revealed from this level. The houses were built primarily of mud, reed-plaster. Remains of a wooden platform have been exposed. The period witnessed an extensive use of ringwells. Cast copper coins have been found in large numbers.

Making an overview of the sites found in and around the ancient Kasi region, it has been observed that almost in all the sites (Prahladpur[12], Mason[13], Kheradi[14]) N.B.P.W. appears after an elaborate phase represented by the black slipped ware, black and red ware and associated sherds of grey and red slipped wares. Black slipped ware, black and red ware continue along with N.B.P.W. Terracotta figurines of both hand modelled and moulded types, at times polished with N.B.P. slip, have been found in the assemblage. The houses are usually mud built types, but ringwells in the homestead pattern seem to have been very popular. Occurrences of punch marked and cast copper coins are most frequent. Iron tools are found at this level profusely.

Sravasti[15] the capital town of the ancient Kosala Kingdom, shows another interesting deposit of the so-called Maurya cultural horizon in period I. The place during this period was an important centre of the then commercial life. We are told how Sravasti was linked up with all the important centres of northern, western and north-western India[16]. The place was associated with the Buddha and Mahavira.

The ancient site of Sravasti shows two different components :—Maheth was the ancient fortified city area, while Saheth was the monastic complex, comprising shrines and Viharas. The city was surrounded by a wall crescent shaped rampart. A fortification was built in

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the post-Maurya time. Three cultural periods were exposed[17] of which period I, contemporary to Buddha, belongs to the Maurya time. Ceramic is represented by the N.B.P.W., black slipped, black and red ware, grey and plain red ware. A number of pieces of the P. G. ware have been found in the assemblages. The site is very rich in antiquities and yields evidences of an improved bead industry, ivory objects and luxury items like imported translucent glass bangles, copper jewelleries and terracotta human and animal figurines. Iron objects have been found in plenty, though no coin is reported from this phase.

There are two other important excavated sites in the trans-Ghaghara-Saryupar plain. These are Ayodhya[18], the capital of the Kosala kingdom and Sohagaura[19]. While Ayodhya located on the right bank of the Sarayu seems to have been occupied for the first time during the time of Buddha (identified with an ancient city of Saketa), Sohagaura is reported to have had elaborate pre-chalcolithic, chalcolithic phases. The cultural period of the Mauryas began in Sohagaura only in the period IV. The black and red ware, black slipped were are found continuing even at this phase. The period has yielded rich antiquities comprising of different luxury items used for day to day life. A profuse use of coins is traceable in this stratum. The most important discovery of the site is the famous Sohagaura copper plate written in Maurya Brahmi character. Besides, a number of inscribed sealings bearing individual names have been found. House remains are of the usual mud built types, plastered with reeds and mud. A Recent excavation conducted in 1978 at Ayodhya has reported a structure made of Kiln burnt bricks. Ringwells are the usual accompaniments of the dwelling plan.

V

Coming to the Indo-Gangetic Divide and the upper Ganga plain which was in the geographical focus throughout history, we come to know, archaeologically, how during the Maurya period the region entered into a new arena of life. This can be envisaged from the archaeological picture laid bare at Rupar in period III[20]. Historically the stratum brings a significant correspondance with the historical archaeological situation of the Gangetic Valley. A large number of N.B.P. wares of different shades and colours, an inscribed seal written in Maurya Brahmi character, terracotta figurines of the typical Maurya type and a large number of punch marked coins testify to this. The period has also yielded a broken stone disc minutely carved with a figure of the goddess of fertility. An important point of history that one takes note of in this connection is that Rupar III after the break from Harappan culture marks the beginning of a new phase of history. For the first time the region acknowledges the authority of an eastern power. This is further proved by the assertion of the political authority of Asoka declared by the Topra pillar edict[21].

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The geographical epi-centre of the two epics, that is the upper Ganga plain became dotted with small and big settlement centres during this period, revealing remains of the sites connected with the Maurya cultural complex. It is important to note that at a general level the infrastructural base of this region was already formed during the P. G. ware level in the sixth-seventh century B. C. But the region assumed its final shape only in the N. B. P. ware phase. During this period a number of centres grew up. We propose to go into details of the archaeological remains unearthed at four key sites of this region. These are Hastinapur, Atranjikhera, Mathura and Kausambi.

Beginning with Hastinapur[22], the capital of the Kauravas, one observes how the site has laid bare a rich spectrum of history from the prehistoric to the late historical phase. The deposit labelled as Maurya (period III) begins only after period I (O.C.P.) and period II (P.G.W.). Period III which is dated between the sixth and third century B.C. reveals all the distinctive Mauryan objects like ceramics (N.B.P.W of different shades, red ware and plain grey ware) terracotta figurines, punch marked cast copper coins and a large number of beads made of semi-precious stones. The period is characterized by the extensive use of iron and copper. The period provides an elaborate evidence of structural activities by using burnt and mud bricks. Ringwells are found in association with the dwellings. Bricks were used for making ordinary dwellings as well.

Hastinapur seems to have developed a number of ancillary centres. Among these the most important are Alamgirpur[23], Allaphur[24] and Kaseri[25].

Located on the right bank of the river Kali (a tributary of the Ganges), Atranjikhera[26] emerged as an important centre during this period. The site reveals the evidence of continuous occupation from the O.C.P. (period I) black and red ware (period II), P.G.W. (period III) to the N.B.P.W. (period IV) phase. Period III ascribable to the Maurya period yielded not only a deluge of antiquities in association with P.G.W. (III B), or in grey, black, black slipped and red wares, but also yielded a very rich crop pattern and evidences of the domestication of animals. Coming to this stratum one experiences a remarkable leap in the material life, when a sudden spur of activities is noticed in all spheres of life. This is noticeable from period IV B. Along with the wattle and daub construction, brick structures were being built more frequently. Structural activities during this time show ringwells, granaries and apsidal temple. This was the time when the defence wall was built. The period is characterized by the profuse use of iron and copper. As a matter of fact of evidence of iron objects like plough, sickle, hoe, dagger, nail, clamp, socketed clamp, hook, bolt, plumb ball, chopping knife, nails, chisel, etc. leave no room for any doubt that iron came to play a very important role in the contemporary socio-economic life. A few pieces of gold have been found from this level. The period reveals interesting evidences of terracotta art. The period is said to have developed immensely so far as agriculture is concerned.

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The report tells us of the production of a new kind of pulse *(urad)* besides rice, wheat and barley in profuse quantity.

Unfortunately we are not in a position to identify this huge place as yet, though the excavator is in favour of identifying it with Vaitranya of Pali literature. Be it or not, it is definite that the site grew up to cater to the requirements of the contemporary wealthy people.

On the left bank of the Kali, just opposite to Atranjikhera, another rich centre called Jakhera[27] grew up simultaneously with Atranjikhera, revealing similar cultural deposit.

Mathura[28] on the Yamuna (capital of Surasena kingdom) has laid bare identifiable Mauryan remains in period II and period III, supposed to represent the Maurya phase. This was the time when the place was fortified by a mud wall. Within the city one finds the structural works like mud-platforms, mud built houses. Use of Brick was very much restricted, found only along with this base of a platform. period II also shows the continuation of this phase of life, except that the period witnessed regular use of baked bricks. Lime plastered floor became popular during this phase. Use of brick is evident in the last phase of period III.

The antiquities found from period II and III include the cultural assemblages typical of the Mauryan time, yielding the diagnostic terracotta figurines, seals and sealings, coins, the N.B.P.W. and associated wares, the beads and a profuse number of luxury items made of copper, ivory and bones. These archaeological remains no doubt suggest that Mathura entered into a comple urban status during this time.

It is important to notice that like a major urban status as was Mathura, a number of small and big urban centres grew up surrounding the city of Mathura. The most important of these are Sonkh, Noh.[28A]

The extensive and continuous excavations undertaken at Kausambi[29] revealed four successive periods of which period III belongs to the Maurya cultural phase. The period revealed a rich quality of N.B.P.W. ; structurally too the phase was very important. Bricks seem to have been used extensively at this phase, not only for building the ramparts or in the guard rooms and bastions, but also in the palace complex ; bricks were freely used in making ordinary buildings. Antiquity wise, the site is very important, not just for yielding the varieties of beads, ivory objects, antimony rods, terracotta figurines and decorated flesh rubbers of various kinds, but because it shows the use of different types of iron objects, such as ring, adze, nail, door hook. We should remember in this connection that during this period Kausambi was the capital town of the Vatsas, who were intimately connected with the kingdom of Magadha. Located near Kausambi the site of Sringaverapura[29A] provides interesting evidence of Maurya Cultural deposit in period III. Apart from yielding the N.B.P.

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sherds in profuse quantity, in sub period III B & C, the period has revealed reach antiquities. These include copper vessels, copper & iron objects and cylindrical weights of agate and chalcedony. Burnt brick structures appeared during this period.

VI

After a sweep survey of the great northern Indian plain we now shift to the landform which stretches from the Rajmahal hills in the north to the Bay of Bengal in the south. The region comprises of four different soil formations—one showing Vindhyan alluvium, the second composed of the Gangetic alluvium and the third standing for the large traits of Pleistocene alluvium found in the Barind region and Tippera surface. The remaining geographically distinguishable area represents the deltaic plain of recent origin. The historical pattern of this region was determined by these geographical factors. We are aware how the lower Ganga plain, the Barind and the stretch of the older alluvium deposit bordering the lower Ganga valley were affiliated to Magadha as parts of the twin kingdoms of Prasioi and Gangaridae during the time of Agrames in the 4th century B.C.[30] Gangaridae possibly represented the Gangetic alluvium belt, which included parts of Barind and the Vindhyan alluvium.

Before presenting the archaeological history of the lower Ganga plain it is perhaps necessary to recall the elements found in this region ascribable to the Maurya. It is observed that very few sites in this region show categorically a Maurya level. On the other hand the real picture shows that the so-called Mauryan objects (N.B.P.W., punch-marked and cast copper coins, archaic terracotta figurines with stamped design) are found in association with the typical Sunga materials. On the basis of these the stratified position very often is labelled as the Maurya-Sunga phase. The materials bearing Mauryan traits are found continuing here for a longer time.

There is no dearth of early historic sites in this part of the country. The most important are Mahasthangarh, Bangarh, Chandraketugarh, Tamluk, Pandurajardhibi, Mangalkot and Kotasur. The diggings at Mahasthangarh in the Barind plain have revealed Maurya associated stratum in period I[31]. The city then was fortified by a mud wall. It is reported to be characterised by the N.B.P.W. and punch marked, cast copper coins, diagnostic terracotta figurines and associated antiquities. Unfortunately, no detailed report is available to know about the kinds of objects found from this level. Some of the terracotta figurines reported from this level show the Sunga characteristic style. The discovery of the plaque written in Maurya brahmi no doubt confirms the site's close connection with contemporary Maurya administration.

Bangarh on the river Punarbhava located in the same Barind landform reveals occupational deposit of the Mauryan cultural period in stratum V,[32] i.e., period I. The

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materials found from this level include a few N.B.P.W. and associated ceramics of red ware and grey ware, including two fragments of highly polished black potteries. The period has yielded beads of semi-precious stones, terracotta inscribed sealing, copper and silver punch marked coins, a few terracotta figurines and a 'typical Maurya terracotta head'. The period reveals some structural remains along with ringwells.

Chandraketugarh situated on the river Vidyadhari, a tributary of the Ganga in the district of 24 Parganas has laid bare extensive remains of the N.B.P.W. and associated potteries of black slipped and grey ware in period I.[33] The N.B.P.W. of this place is characterized by a variety of colours (coal black, golden, steel blue) and shapes. The associated ceramics are also of the finest quality. The antiquities found from this level are beads of precious, semi-precious stones, copper and glass, and a few terracotta images, of which one seems to be a naga figure. A drain of pottery pipe has been found from this level. Period II reveals N.B.P.W., cast copper coins and punch marked coins, including terracotta figurines of the so-called Sunga stylistic types. Period I and II have laid bare remains of houses made of bamboo, wooden logs, wooden planks and tiles.

The excavations at Tamralipta[34] have revealed the N.B.P.W. and associated objects in period II. ON the basis of the material remains the period may be assigned to the Maurya-Sunga phase. A brick built tank and a few terracotta ringwells have been laid bare at this level.

Mangalkot in Burdwan district on the confluence of the Ajay-Kunur is a site found to have continued from the chalcolithic to the historical period.[35] Its period II reveal rich antiquities comprising cast copper coins, a single piece of punch marked coin, terracotta figurines representing a bull with notched design and diagnostically Sunga figurines, a coarse type of N.B.P.W., associated black polished, black slipped, grey ware and mat red type of potsherds and a large number of iron implements belonging to the Maurya-Sunga phase. Structural remains comprise of the ruins of mud built houses and ringwells.

Historically speaking the early settlements in Orissa starts with a firm datum line given by the Asokan inscription at Dhauli[36] and the Asokan edict at Jaugada[37] referring to two Mauryan administrative centres, namely Tosali and Samapa.

But it is important to note that inspite of being connected with an organised Magadhan political structure, no accepted Mauryan archaeological evidence associates this site with the Maurya cultural assemblage. Period I of Sisupalgarh (identified with Tosali?) representing the formative period of the place (supposed to be associated with Maurya) reveals red pottery industry. Its period II, split in II A and B marking its full blown stage, has not yielded any diagnostic Mauryan objects. Archaeologically, Sisupalgarh[38] does not seem to have fallen within the Maurya cultural zone.

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VII

The bird's eye view presented in the aforesaid survey shows that although each region has a specific developmental history emerging from its basal level, this vast area with all its regional centres fell within the orbit of the Maurya political, economic and cultural domination. The survey confirms that for each region there were more than one major centres economically and socially connected with the central power structure. There is no doubt that during this time a rapid expansion of settlement took place, but at the same time a link with an internal network of the then India was maintained. It was through an effective centralised political control that India—from the north to the south, and the west to the east-was bound up by a common historical and economic force.

A point which needs emphasis here is that despite a pan Indian vision characterising the Mauryan period, household objects used in the common man's dwellings have strong regional expressions.

The associated wares used along with the N.B.P.W. shows this character. Making an overview of the ceramic materials surveyed in the aforesaid pages we come across a pattern of distribution, indicating a regional manifestation. It is noted that while the black slipped ware is found in a concentrated form (in association with the N.B.P.) in the middle and lower Ganga plain, this is not so in the upper Ganga valley and in the Divide. One may note in this connection that the site like Manjhi[39] in the district of Saran reveals in the pre-N.B.P. phase (period I) black slipped ware as the dominating ceramic industry. This appears along with black and red ware. Period II witnesses N.B.P.W. along with black slipped sherds. The same archaeological picture is noticeable at Narhar[40] in Gorakhpur district. Its period II reveals a pure black slipped ware phase, while period III demonstrates black slipped along with the N.B.P.W. Another interesting difference in the pattern is also noticed. While the sites in the middle Ganga plain usually show the continuation of black and red ware along with the N.B.P.W. the upper Ganga plain demoinstrates its association with the P.G.W. One of the dominant ceramic types in this region is the grey ware. Such regional elements are emphasised in terracotta figurines as well. The archaic terracotta figurines continuing along with the N.B.P.W. in the Middle and lower center Ganga plains show pre-N.B.P.W. forms in the figures of Nagini and mother goddesses. Their decorations with circlets and notched designs or punched devices for working up on the different parts of the body are remarkably pre-Mauryan. These appear along side the highly sophisticated terracotta figurines typical of the period. The mother goddess images produced in Mathura and distributed in the sites of the upper Ganga plain are altogether different in form and features from those produced in Magadha region. Indeed the fat steotopygaus female produced at Mathura is distinct to the types, having no affinity with their counterparts of the Magadha region.

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But with all these regional distinctiveness, the Mauryans brought for the first time different regions together under the aegis of a consolidated power structure and a pan-Indian economic order based on surplus agriculture, trade and commerce. Obviously the common ceramic like the N.B.P.W., the standardized monetary medium, the script directing the entire country in a common norm, the efficient use of iron technology for diversified activities and the use of stone as a medium of art united all the diverse groups of people into an integrated whole. The country slowly but steadily was coming within a new historical situation, known as urbanization.

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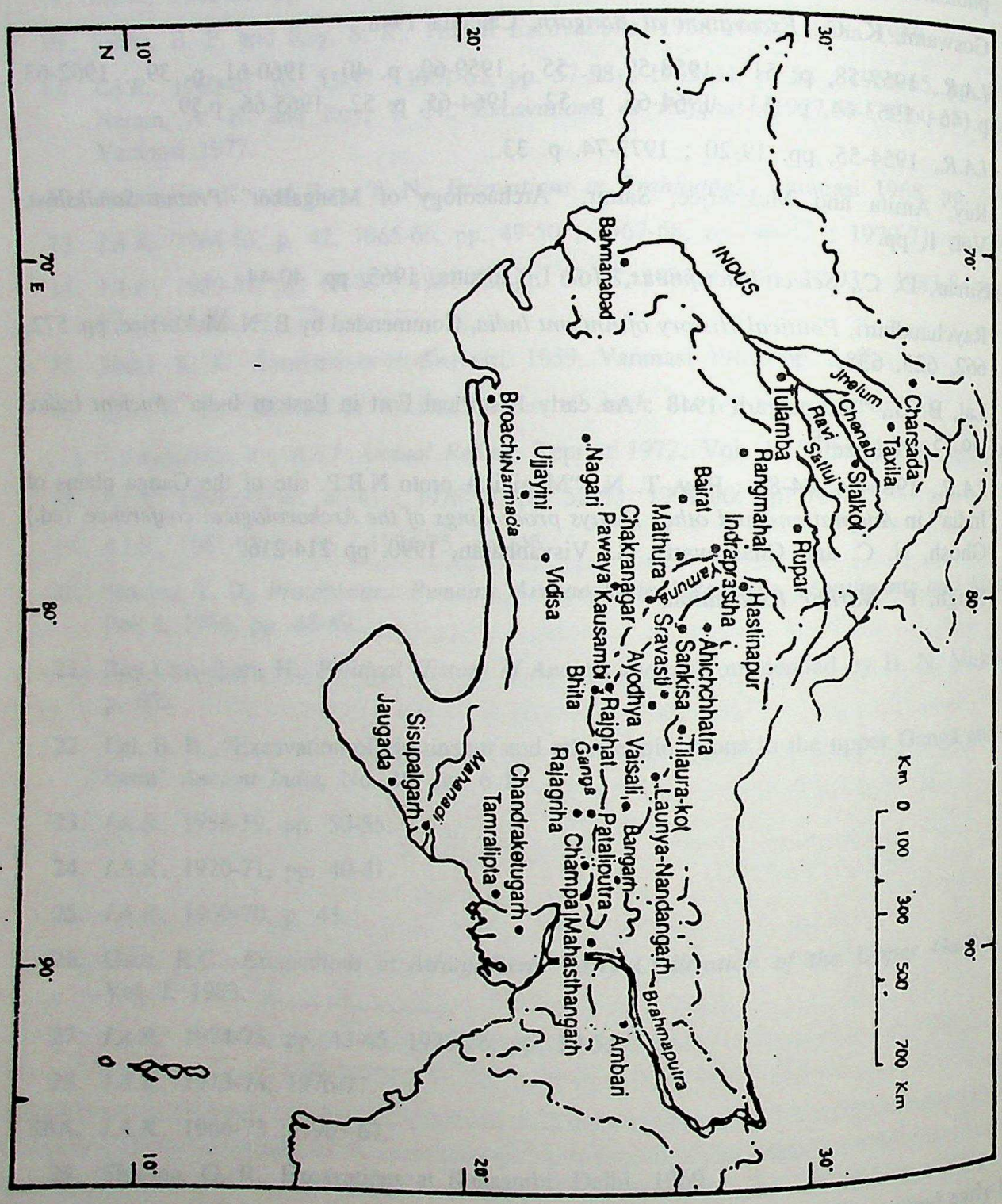
General distribution of sites mentioned in the paper -



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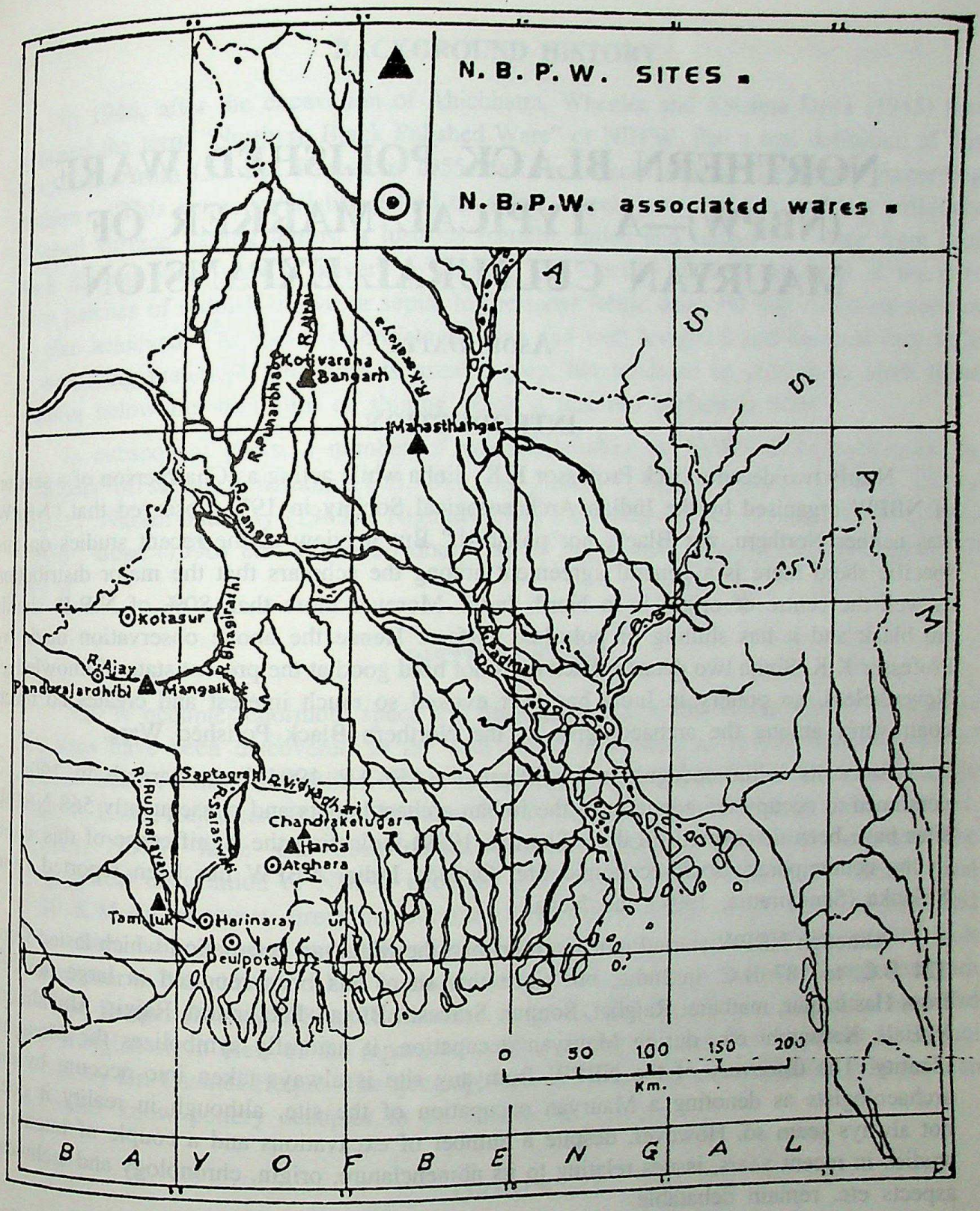

MAP SHOWING REPRESENTATIVE N. B. P. W. SITES L. – GANGA VALLEY.

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NORTHERN BLACK POLISHED WARE (NBPW)—A TYPICAL MARKER OF MAURYAN CULTURAL EXPANSION

ASOK DATTA

INTRODUCTION

Nearly two decades back Professor K.K. Sinha while acting as Chairperson of a session of NBPW organised by the Indian Archaeological Society in 1971 observed that "NBPW was neither Northern, nor Black, nor polished." But in view of the recent studies on this specific sherd there is a general agreement among the scholars that the major distribution as well the centre of origin is in North India. Morever more than 80% of N.B.P. sherds are black and it has shining or poloshed surface. Hence the above observation made by Professor K.K. Sinha two decades back does not hold good at the present state of knowledge. Nevertheless, no pottery in India has ever evoked so much interest and creates so much controversy among the archaeologists as the Northern Black Polished Ware.

Since its initial recognition by Marshall (ASI-AR 1904-5) at Sarnath in 1904, it continued to occupy the attention of the Indian archaeologists and consequently 568 NBPW sites have been discovered till date (Sharma, 1989) indicating the significance of this sherd in the contemporary socio-economic life. Outside India, NBPW has been reported from Srilanka (Seneviratna, 1994) and Nepal.

Although NBPW started much earlier than the Mauryan occupation which lasted from 324 B.C. to 187 B.C. in India, but since this sherd has been reported in large number from Hastinapur, mathura, Rajghat,. Sonpur, Sravasti, Buxar, Pataliputra, Rajgir, Ahichhatra, Vaisali, Kausambi etc. during Mauryan occupation, it naturally symbolizes the Mauryan identity. The discovery of the NBPW from any site is always taken into account by the archaeologists as denoting a Mauryan occupation of the site, although in reality it does not always seem so. However, despite a number of excavations and a couple of intensive studies in recent years, issues relating to its nomenclature, origin, chronology and technical aspects etc. remain debatable.

Besides NBPW, the other associated pottery of the Mauryan period are grey ware and simple plain red ware. But since NBPW is dominant among them, the author, at the present context, will confine himself to NBPW only.

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BACKGROUND HISTORY

in 1946, after the excavation of Ahichhatra, Wheeler and Krishna Deva (1945) first proposed the term "Northern Black Polished Ware" or NBPW. But a real definition of this sherd came from Lal and Thapar in 1955 after their excavation at Hastinapur. According to them : "This ware, invariably potted on a fast wheel, is usualy thin and has strikingly polished surface having almost a lustrous metallic finish and ranges in colour from coal black through steel grey or silvery to golden. The exterior surfaces of some of the pots show patches of reddish brown or sepia. In the same fabric deep red and chocolate colours are also achieved. The paste is consistently fine and well levigated and contains very little of tampering materials. The core is usually grey, but tends to be reddish in some cases wherein below the thin film of shining black a mat red surface is seen".

In subsequent years, a number of valuable studies on NBPW have been made by a number of scholars including S.B. Deo and Ansari (1958) ; Wheeler (1959) ; Thapar (1957) ; Narain and Ray (1969) ; Nigam (1961) ; Tripathi (1976) ;Sharma (1983) ; Misra (1989) ; Bose (1996) etc. which no doubt, throw significant lihgt on different aspects of NBPW.

DISTRIBUTION

NBPW occupies enormous space and time dimensipn in the Indian History. Altogether 568 sites have been discovered so far with major concentration in the alluvium tract of western Uttar Pradesh and Bihar. They are mostly reported from Uttar Pradesh, Madhya Pradesh, Bihar, Rajasthan, Punjab, Mumbai, Delhi, Chennai, Andhra Pradesh, Orissa, Bengal. Besides, NBPW have also been reported from Pakisthan, Nepal and Srilanka. The geographical distribution of NBPW occupies 2,121 K.M. in the north/south direction and 17,90 K.M. in east/west direction. Udigram in the Swat valley is the northern limit and its southern limit is found and at Kondapur/Chebrohi in Andhra Pradesh. Its western limit is Kandahar in Baluchisthan while its eastern limit is extended upto Bangarh/Chandraketugarh in West Bengal (Misra, 1989). The eastern limit of NBP distribution would be extended upto Bangladesh in view of the reports of NBP occuring at a number of places in Rajsahi district by Dr. Enamul Hoque. The geographical area thus covered by NBPW is larger than any other know pottery occupies in the Indian soil.

ORIGIN

The area lying east at the confluence of ganga and yamuna comprising very fine alluvium soil is known as middle ganga valley. This region broadly occupying eastern uttar Pradesh and Bihar upto Rajmahal is possibly the homeland of NBPW.

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In this area, a village based agricultural community developed as early as 1700-1800 B.C. They are designated as Neolithic/Chalcolithic communities. This phase of early development of agricultural community has been decomented at a number of sites, of which the important ones are Chirand, Taradih Senuwar, Maner, Manjhi, Checher, Sohagoura etc. The ceramic types were grey ware, red ware, black slipped and black and red ware. The pottery was initially hand made and later became wheelmade.

Towards its upper phase, extension of new settlements are found in other sites possibly due to population increase on the one hand and large scale application of iron technology on the other hand. Allchins (1983) traced the developed of this second phase around 800 B.C. on the basis of Sonpur Radio Carbon dating, but to my mind, the initial process of extension of settlement must have started around 1000 B.C. The sites documenting the second phase of development include Sonpur, Rajghat, Rajgir, Pataliputra, Vaisali, Prahladpur, Champa etc. which do not show any evidence of painted grey ware cluture. The initial phase of this culture is known as BRW culture with the characteristic ceramic types of black and red, grey, red and black slipped ware. It is in this area that NBPW evolved from local potteries and possibly from black slipped ware. Hence, this region is known as the nucleous zone or the core area of NBPW.

A critical review of the excavation reports of Chirand, Taradih, Senuwar, Chechar, Sonpur, Rajghat, Prahladpur, Sohogaura, Vaisali etc. lying in the core region show that the NBP culture was preceeded by a Chalcolithic or simple BRW culture. But in case of sites lying outside the core region, namely Hastinapur, Ahichhatra, Atranjikhera, Jakhera, Mathura etc., the NBP culture was preceeded by a painted grey ware (PGW) culture. In some cases, there is a clear cut overlap phase which include Hastinapur, Atrajikhera, Kausambi, Jakhera etc. It shows, therefore, that both the regions represent different pattern of cultural development and at one stage of their development, they influenced each other.

The NBP culture of the core region was preceeded by and associated with in its early phase with BRW/BSW/GW/RW, but in the late phase, BRW disappeared while BSW, GW and RW continued with NBP (Misra, (1989). At Prahladpur, period 1A is characterised by greater frequency of BSW, but in Period 1B, NBP appeared as a dominent ceramic type while BSW/RW/GW continued in lesser number. Finally, in Period 1C, NBP continued in degenrated form (A.K. Narain and T.N. Ray, 1968). At Chirand, the excavator observed greater frequencey of BSW in the upper level of BRW culture. At Manjhi Period I is characterised by BRW/BSW/RW. But among them, BSW occured in greater frequency for which Professor B.P. Sinha (1995) proposed to designate this phase as "BSW Culture". NBP appeared at the upperlevel.

A similar sequence was observed by the excavator of Vaisali where the shapes of BSW was identical to NBP shapes (B.P. Sinha, 1958-62). The present author had the

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opportunity to observe a similar sequence during Mangalkot excavation where Period II, know as transitional stage, was characterised by greater frequency of BSW. The excavators of Hatigra observed a substantial increase of BSW in Period II along with BRW and other ceramic types of Period I. According to them, it has polished surface and grey section (Ghosh, nag and Chattopadhyay, 1987-88). But unfortunately, the transrformation of Black slipped ware into black polished ware did not happen both at Mangalkot and Hatigra. Consequently, the so called Maurya/Sunga period (Period III) of Mangalkot was characterised by simple black slipped ware and grey ware, although the shapes were mostly confined to bowls and dishes. But during the same period of time, the pre-Mauryan deposit of Chandraketugarh being characterised by black silpped ware, grey ware, red ware and few BRW ware represent a much potential stage for the subsequent development of black polished ware of Chandraketugarh. This sherd which occurs most frequently is not exactly same and identical with the middle ganga valley NBP sherds. It originated locally, but display the same amount of skill in the production of this special type of ceramic. It has highly polished sufrace with dark brown section and very thin body. The shapes include small dishes with flat bottom and straight rims, small bowls, big shallow dishes with incurbed rims, convex sided bowls with saggar base, bowls with bulging body and saggar base etc. (Datta, 1995). The differences between BPW of Chandraketugarh and NBP lie in shape variation and pottery-section which speak of different origins. The ceramic artisans of Chandraketugarh could not possible achieve that amount of perfection in technology as it happened in case of middle ganga valley. As such different colour shades are not available at chandraketugarh, although attempts are visible on few sherds. Chandraketugarh definitely represents a production centre of black polished ware in eastern india. The chronology and stratigraphical sequence of the site have not been properly documented in excavation and as such the history of the land demands a fresh excavation of this site. Nevertheless, it is logically presumed that the initial settlement of Chandraketugarh started around 400 B.C. or ittle earlier. Because otherwise, the literary sources referring the name of Gange or Gangaridai, the capital or which, according to Professor Mukherjee, has been identified with this site, can not be justified.

However, coming back to our original problem, let us compare the pottery shapes between NBP and BSW. In both the cases, bowls and dishes are common and frequent types. The shapes are almost same and identical. The shape of dishes in both the cases varies between convex (inverted) and straight sides while bowls are mainly straight, convex, carinated, corrugated or rounded sides. The other types of NBPW include lid, handi, vase and basin, but they occur less frequently.

Regarding the similarity of types between NBPW and PGW, one may conclude that NBPW on its western movement encroached upon the PGW territory. Quite naturally, they

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interacted each other during their coexistence. Some common shapes in the ceramic industries of both the cultures reflect this interactions.

It appears, therefore, that NBPW evolved from BSW and middle ganga valley was the core centre where people acquired highest perfection in this technology.

CHRONOLOGY

Out of 568 sites, 80 sites have been excavated and more than 100 C-14 dates are available, but despite this situation, there still exists ambiguity among the scholars about the NBPW chronology.

In view of the wide distribution covering an enormous geographical area, one should be very careful before one attempts to date the lower and upper limit of NBPW. Hence, before we try to bring a uniform dating of NBPW, we have to examine whether the technology of manufacturing this De-lux pottery was transferred to the peripherial regions or the pottery itself as a market commodity was transported to distant areas from production centre through a distribution network.

The relative less frequency of NBPW in the outlying regions (Misra, 1989) may explain that the pottery was transported from the core area. The discovery of broken NBP pots repaired with copper wire from Bairat in Rajasthan, Ujjain in Madhya Pradesh, Rupar in Punjab and Besnagar in Madhya Pradesh etc. strongly suggest that it was always considersd as prized commodity. The inadequate supply may be due to long distance or high cost of production. But in sharp contrast, NBPW comprises more than 50% of the total ceramic assemblage at Rajghat. Similarly, Vaisali excavation has yielded almost all the colour shades of NBPW. It appears, therefore, that the peripherial regions did not have any production centre of their own and for this Delux pottery, the supply came from the middle ganga valley. If the situation is so, one may expect that the date of the core region should be carlier than the peripherial regions.

In view of the above observation, let us review the C-14 dates trom the core region as well peripherial regions. The available C-14 dates from Rajghat, Sonpur, Sohagaura, Rajgir, Kausambi, Chirand etc. of the core region on the one hand and C-14 dates from Rupar, Atranjikhera, Hastinapur, Purana Quila, Charsada, Amaravati, Besnagar etc. of the peripherial regions have been tabulated (Table No. 1). The table shows that the core reion has slightly an earlier beginning. The initial dates of both the regions are 620 B.C. and 540 B.C. respectively which means a gap of about 80 years. The time gap is enough for the technology transfer as well distribution of the commodity to the peripherial regions. Hence, we conclude that NBPW originated in the middle ganga valley from black slipped (BSW) ware of the pre-NBP level around 600 B.C. and by about 500 B.C. it spreaded over the peripherial regions.

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On the the basis of typology, frequency, stratigraphy and other variables, we can trace the development of NBPW into two phases, namely early and late. We propose 600 B.C. to 300 B.C. for the early phase and 300 B.C. to 1st century A.D. for the late phase of NBPW.

TECHNICAL ASPECTS

A number of technical studies on NBPW have been made both inside and outside India with a view to know the factors responsible for the colour variation and lustrous character of the NBPW. Both the studies conducted by different scholars show conflicting views. The major area of disagreement centres round the preparation and application of the slip as well as firing technique which are mainly responsible for the colour variation and lustrous or shining character of the sherd.

Bharadwaj (1969) and Dr. Lal (1959-60) agree that the slip was prepared by refined clay and organic substances like oil and plant juice to produce the lustrous surface of the sherd. But they differ significantly in respect of post-firing application of the slip. Bharadwaj refused to accept the theory of post-firing treatment of slip as suggested by Dr. Lal. He however, suggested that after the application of slip, pots were fired under reducing condition. According to Bharadwaj, "the organic substances of the slip will carbonized under reducing condition which will offer uniform lustrous black surface".

On the other hand, Hedge (1971-72) suggested that the magnetic oxide of iron present in the clay is responsible for its black colour, while the slip prepared from Sajjimati (Sali) is responsible for its lustre or shining character. According to Hedge, "The sodium components of the slip when fired to 700°C are decomposed to soda which fluxes the clay to form complex silicates which on cooling impart the glaze like glass on the surface of the ware".

It appears, therefore, from the above technical study that magnetic oxide (Ferrus oxide) and sodium components present in the clay slip are actual parameteres which when fired under reducing condition will bring about black colour and lustrous or shining feature of the NBPW.

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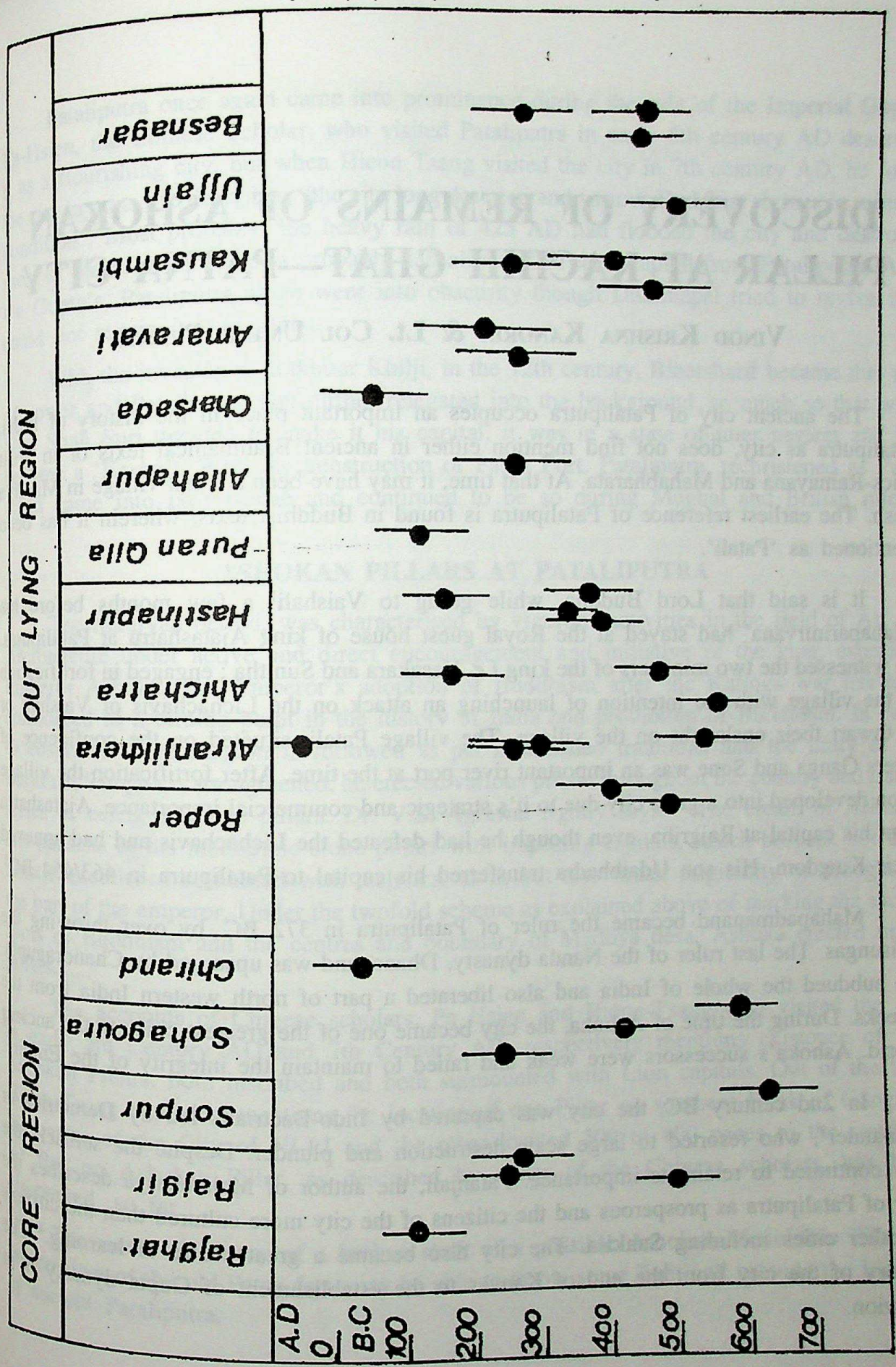

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DISCOVERY OF REMAINS OF ASHOKAN PILLAR AT KACHHI GHAT—PATNA CITY

VINOD KRISHNA KANORIA & Lt. COL UMESH PRASAD

The ancient city of Pataliputra occupies an important place in the history of India. Pataliputra as city, does not find mention either in ancient Brahmanical texts or in great epics-Ramayana and Mahabharata. At that time, it may have been a small village in Madhya Desh. The earliest reference of Pataliputra is found in Buddhist texts, wherein it has been mentioned as 'Patali'.

It is said that Lord Buddha, while going to Vaishali[1] a few months before his 'Mahaparinirvana' had stayed at the Royal guest house of king Ajatashatru at Pataliputra. He witnessed the two ministers of the king *i.e.* Vasakara and Sunitha ; engaged in fortification of the village with the intention of launching an attack on the Lichachavis of Vaishali or to thwart their onslaught on the village. The village Patali, situated on the confluence of rivers Ganga and Sone was an important river port at the time. After fortification the village soon developed into a great city due to it's strategic and commercial importance. Ajatashatru kept his capital at Rajgriha, even though he had defeated the Lichachavis and had annexed their Kingdom. His son Udaibhadra transferred his capital to Pataliputra in 463/464 BC[2].

Mahapadmanand became the ruler of Pataliputra in 372 BC. by over throwing the Saisungas. The last ruler of the Nanda dynasty, Dhananand was upsurged by Chandragupta. He subdued the whole of India and also liberated a part of north western India from the Greeks. During the time of Ashoka, the city became one of the greatest cities in the ancient world. Ashoka's successors were weak and failed to maintain the integrity of the Empire.

In 2nd century BC, the city was captured by Indo-Bactrians led by Demetrius or Menander[3], who resorted to large scale destruction and plunder. Despite the setback, the city continued to retain its importance. Patanjali, the author of Mahabhasya describes the city of Pataliputra as prosperous and the citizens of the city more cultured than the citizens of other cities including Sankisa. The city also became a great centre of learning.[4] The history of the city from the end of Kanvas to the establishment of Gupta dynasty is in oblivion.

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Pataliputra once again came into prominence during the rule of the Imperial Guptas. Fa-Hsien, the Chinese Scholar, who visited Pataliputra in early 5th century AD described it as a flourishing city, but when Hieun Tsang visited the city in 7th century AD, he found the city in ruins. He describes, "the city long deserted and various Buddhist shrines in ruinious condition". Most probably, the heavy rain of 425 AD had flooded the city and destroyed most of the habitats.[5] Guptas probably had also shifted their capital from Pataliputra. After the Gupta's, Pataliputra again went into obscurity though Dharmapal tried to revive it, it could not regain its old glory.

With the invasion of Bakhtiar Khilji, in the 12th century, Biharsharif became the seat of power and Pataliputra was further relegated into the background, so much so that when Sher Shah Suri decided to make it his capital, it was in a state of utter neglect and had become a 'Kasba'[6]. With the construction of Patna Fort, Pataliputra, rechristened as Patna again came into prominence and continued to be so during Mughal and British rule.

ASHOKAN PILLARS AT PATALIPUTRA

The Mauryan period, was characterised by vigorous activities in the field of Art and Architetcure under active and direct encouragement and initiative of the king, especially Emperor Ashoka, The Emperor's adoption of Buddhism after the Kalinga war has been considered as a turning point in the history of India and promotion of Buddhism. In order to ensure that the religion is followed as per established traditions and the unity of the Buddhist Samgha is strengthened, he erected various pillars throughout the country and issued series of edicts on these pillars. Dr. V.S. Agrawal rightly says.[7] "The cream of Ashokan Art consists of his monolithic stone pillars with imposing capitals, which bespeak not only artistic excellence combined with technical skill, but also much originality of thought on the part of the emperor. Under the twofold scheme as explained above of marking the sacred spots of Buddhism and the centres and boundary of Madhya desa, Ashoka erected many pillars....."

The accounts of Chinese scholars, Fa Hsien and Hieun-Tsang who visited the city in early 5th Century AD and 7th Century AD, respectively mentions existence of two Ashokan Pillars, both inscribed and both surmounted with Lion capitals. Out of the two, Hieun Tsang explicitly mentions the location of one Pillar on southern Bank of Ganga in the centre of the City of NI-LI and the other located 300 to 400 paces to the south of it.[8] But no Ashokan Pillar, as described by either of the Chinese scholars, has been discovered, so far.

The recent discovery of a broken shaft of a possible Ashokan Monolithic Pillar, in the precinct of the old Patna fort, may be able to throw some light and provide the location of ancient Pataliputra.

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CIRCUMSTANCES OF DISCOVERY

At the outset, we would like to state that, the authors alongwith Dr. Prakash Charan Prasad, Ex-Director of Archaeology, Bihar and Shri Magan Deo Narain Singh, are conducting a survey of the routes, taken by Lord Buddha in various parts of ancient Bihar.

Literary sources, giving description of Lord Buddha's Journey from Rajgirh to Vaishali, identifications ancient sites mentioned in these texts with modern names and circumstances in which Sher Shah decided to construct the Patna Fort in the present location[9] brought us to the area of *i.e.* Kachhi Ghat, Patna city located north of historic Gurudwara in Patna City on the bank of the river Ganga which is well within the precinct of old Patna Fort built by Sher Shah Suri.

Dr. S.R. Roy in "Itinerary of Lord Buddha in Bihar"[10] states that when Lord Buddha arrived at Pataligrama, he stayed at the Royal Guest House of Ajatashatru. At this time Vasakara and Sunitha were engaged in fortifying Pataligrama. The gate through which Buddha entered the city was named 'Gautam Dwar' and the gate through which he departed for Vaishali was named as "Gautam Ghat". The noted historian H. Tripathi[11] has identified "Gautam Dwar"- a place north of Patna City Gurudwara (the birth palce of Guru Govind Singhji).

The above references prompted us to survey the area immediately north of Gurudwara in Patna City. A road going north of Gurudwara and after crossing the main road and going another 100 to 150 yards bifurcates, one going towards the west and the other going towards east to a mosque known as 'Madrasa Mosque'. This Madrasa Mosque has a large open court yard on the southern bank of the Ganga. The mosque is located in the extreme western end of the old precinct of Patna Fort and was constructed in 1628 by Saif Khan, the Mughal Governor of Bihar and brother-in-law of Emperor Shahjahan.[12] The northern extreme of the court yard, culminates into the old rampart on the river. It was on the way to the rampart, that we noticed a large round stone piece, protruding 3 to 4 inches above the ground in the open court yard east of the Madrasa Mosque. On examination, we could see a small exposed portion on the side of the stone shaft which suggested that the exposed stone piece may probably be the upper part of a long stone column buried underground. The upper portion of the stone piece has been chiselled to make its surface smooth. (Plate No. 1) The polish on the exposed portion on the side further suggested that it is akin to other Ashokan sand stone columns found elsewhere.

The location of the sand stone column in the open ground which is only 50 to 60 feet from the banks of the river and well within the precinct of the old Patna Fort, aroused our curiosity. On looking around, we saw large number of Mauryan bricks (Plate No. 2)

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embeded in the ground and number of 10 to 20 feet long sand stone lintels with grooves for fixing wooden dowels (Plate No. 3) around an adjacent water tank barely 5 to 7 feet from the stone column. Similar sandstone lintels were also found embeded in the rampart wall itself. We also noticed some semi-circular sandstone pieces embeded on the platform from where the steps go down to the river. We probed the depth of the stone shaft along the outer surface with a 3 feet iron rod. The marks on the iron rod suggested that the stone column was going further down. On subsequent visits to the site, we came across many evidences which can be attributed to the Mauryan period. This only confirmed that the buried sand stone piece is the remains of a possible Ashokan Monolithic Pillar. Survey of Fort wall and rampart from the river side further reinforced the assumption. (plate 4) Some elderly people residing in the vicinity also stated that about 30 to 40 years back the stone column was protruding 3 to 4 feet above ground level and the court yard was subquently filled with earth to make it into a plain ground.

HISTORICITY OF AREA OF FIND

It is not just the location of the buried monolithic Chunar sand stone shaft, but also the historicity of the area of discovery which points out the possibility of existence of an Ashokan pillar in the very area. This aspect will be discussed in three separate periods of history, as this has direct bearing on the discovery and also on the conclusions.

PATALIGRAMA 5TH CENTURY BC

Buddhist and Jain sources inform us that river trade and control of river port on Ganga was one of the main issues of war between Ajatashatru and Vajjis of Vaishali. With this reason and coupled with his resolve to destroy mighty Lichachavis, Ajatashatru decided to fortify the strategic village of Pataligrama.[13] It was at this very time, Lord Buddha, on his way to Vaishali from Rajgriha, had stayed at Royal guest house of Ajatashatru and prophesied the future of Pataliputra.

PATALIPUTRA 5TH CENTURY AD

During this period, the only direct evidence available, which has direct relationship with the historicity of the area of find ; is the account of Fa-Hisen. He states[14] "there to four hundred paces to the north of the Pagoda (Stupa) is the place where Ashoka built the City of NI-LI, in middle of which is a stone pillar over 30 cubits (1 cubit = 16.5"). On the top of it there is a lion and on the pillar there is an inscription regarding origin

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of the city of NI-LI with year, month and day on which the inscription was written. To the south of Pagoda, there is a stone pillar 14 feet to 15 feet in girth and over 30 feet in height on it there is an inscription describing the king Ashoka bestowed the inherited portion of the world on the Priest-hood of all quarters and then buying it back with the Jewels. He did it three time."

PATALIPUTRA 7TH CENTURY AD.

Hieun Tsang, visited the city in 7th century. He is quite explicit in the description of the city and the Ashokan Pillars :-

"To the south of the river there is an old town about 70 Li in circuit. Although it is waste and desolate and the parapet of wall still remains to the south of the old palace (precinct), bordering on R. Ganges is a little town, this town has about 1000 houses to the north to the palace there is a stone pillar several tens of feet high, this is the place where Ashoka made the hell....."

IDENTIFICATION OF THE CITY OF NI-LI.

The city of NI-LI holds the key to the whole issue. Both Fa Hsien and Hieun Tsang have described the existence of an Ashokan pillar in the midst of the city of NI-LI. While Fa Hsien does not give the location of the city except that it was located to the north of the palace and a stupa. Hieun Tsang is emphatic in describing the location of the village being on the southern bank of Ganga.

What denotes the city NI-LI? Gen. Cunnigham stateed[15] that it was not NI-LI but the city was known as "NILAI" *i.e.* the place of residence (Nilaya). As per the description/ interpretation of Heiun Tsang's details :-

"Three and four hundred paces to the north of the tower (Stupa) is the spot where Ashoka was born. On this spot he raised the city of 'Nilai' and in the midst of it, he erectéd a stone pillar also about 35′ in height, on top of which he placed the figure of a lion and also engraved a historical record on the front of the pillar giving an account of the successive events connected with the city of 'Nilai' with the corresponding year, day and month".

If all the description mentioned above is taken in totality, one fact, which emerge is that the city NI-LI or Nilai was located north of the palace and on the southern bank of Ganga, and in the midst of the city was an Ashokan Pillar surmounted by a lion.

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PATALIPUTRA/PATNA 16TH CENTURY

It was in 1539 that Pataliputra rechristened as Patna came again into prominence. Sher Shah Suri after his victory in Bengal came to the city. He was much worried about troubles across north of Ganges as his adversaries at Hajipur and Purnea had joined hands against him. It was this compulsion, which prompted him to carry out reconaisance of the southern bank of the Ganges.[16] At that time, the town had become so much neglected that, Abdullah, the Pathan chronicler of Sher Shah has described the town as a 'Kasba' (village). While carrying out survey, he came across the ruins of **"ancient fortifications"** and he was so impressed by the strategic location that he then and there decided to build a fort at that very place. The story of restoration of the old city by Sher Shah has been described by Abdullah in 'Tarikh-i-Daudi'. Abdullah describes[17], "He was standing on the bank of Ganges, when after much solid reflection and sage determination, he said to those who were standing by : If a fort were to be built in this place the waters of the Ganges would never flow far from it and Patna would become one of the greatest towns of the country, because this place is situated to the south of the place, where the Gandak which flows from the north meets the Ganges. The strength of the stream of Ganges is broken and hence it cannot advance towards north. He therefore ordered skillful carpenters and brick layers to make out immediately an estimate for building a fort, where he stood. These experienced workmen submitted an estimate of Rupees five lakh, which on spur of the moment was made over to trustworthy persons. The fort was considered to be exceedingly strong. Biharsharif from that time was deserted and fell to ruin, while Patna became one of the largest cities of the Province. Sher Shah clearly foresaw that Patna would become a great town and therefore he ordered a fort to be built on the old site".

Gen. Cunnigham in his tour notes "In the Gangetic Provinces 1857-76 and 1877-78" writer[18] :- "I think it is probable that Sher Shah retained the lines of rampart as well as ditches of the old city and his principal work was restoration. To carry out in this complete fashion, I believe that every old building would have been sacrificed so that we need not wonder that not one stone is left upon another within limit of the ancient city....."

DETAILS OF EXISTING ASHOKAN PILLARS AND ITS COMPARISON WITH OTHER DISCOVERED MONOLITHIC PILLARS

Though Emperor Ashoka erected number of Pillars in different part of his Kingdom either to commemorate Lord Buddha's association with a place or important happenings connected with the life of Lord Buddha or to enforce the Principles of Dharma and to

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define the boundary of his Kingdom. Evidences are not available to suggest the exact number of such pillars errected. The details of known pillars till day is attached at appx - A.

THE DETAILS OF THE DISCOVERED REMAINS ARE

(a) Diameter of broken shaft at top = 26.5″ (67.2 cm)

(b) Location about 40 to 50 feet south of Northern rampart of old Patna Fort on the river bank.

(c) Relative height of surface level in relation to the present level of Ganga :- 30 to 35′.

Taking into account the above detail and Gen. Cummingham's formulae of reduction of 0.39″ per foot[19] and also taking the base diameter of Lauria Nandangarh Pillar *i.e.* 35.5 inches (only for calculation purposes) the length of the buried shaft in site should be around 18 to 20 feet. Another point which needs to be considered is that the excavation in Shah Kamal Road (Sadar Gali) in Patna City had revealed that the Mauryan level is at a depth of about 12 feet and the contour height of the place is 10R. The contour height of the Madrasa Masque site is 20R[20]. This comparison in contour heights also confirm the assumption that the length of the buried sand stone column is between 18 to 20 ft. and it may be the remains of the Ashokan pillar, which the Chinese travellers Fa Hsien and Hieun Tsang have described in the centre of the city NI-LI or 'NILAI'.

We can only refer to the circumstances of discovery of Rampurava Ashokan Pillar by Karlail in 1901. The ground situation was identical and the pillar was also buried in the ground. Destruction of Rampurva Pillar has been attributed to Mir Jumla, the military commander of Aurangzeb, who after his military campaign in Bengal visited this area to subdue the regional chiefs. Mir Jumla not only destroyed the Rampurva Pillar but also made similar attempts on the Nandangarh Laruia Pillar, where canon ball marks and inscriptions in the name of Mohd. Aurangzeb the Badsah Alamgir Gazi Sun 1071 Hizari (1660 AD) still exists on the Pillar.[21]

CONCLUSION

It is necessary to have a critical appraisal of the site to discover and unearth the remains of the ancient city of Pataliputra. Right from 1783, when Major Rennel indicated the precise location of ancient Pataliputra, archaeologists have been trying to identify and unearth the remains of ancient Pataliputra. Spooner's excavation in early part of 20th century exposed the Kumhrar's pillared hall and wooden platform. Except this, there was nothing to confirm

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that the Royal palace of Chandragupta rivalled the palaces of Susa and Ecbatna about which Megasthenes had described. Further excavations in pre-independence and post-independence periods failed to provide any link or evidence connecting the Pillared Hall being part of the palace complex. These excavations did bring to light many evidences about the history of the city and existence of various historical remains from 4th century BC to 6th century AD, but they are insufficient to corraborate the literary accounts available. If one goes by the various excavated sites and their locations, it becomes very clear that most of these have been undertaken on the outskirts of the present city and the present Patna City area has been ignored, especially the area of the old Fort (Appx-B.).

The discovery of the remains of a possible Ashokan Pillar in the precinct of old Patna Fort and it's exploration/excavation will throw new light on the history of the city. The historicity of the area of find points out that the remains is part of the Ashokan Pillar which existed in the midst of the city of NI-LI or NILAI located on the bank of Ganga.

Ample available evidence of Mauryan bricks and sandstone lintels on the site also suggest the existence of other Mauryan structures as described by the Chinese travellers in the area. Only proper scientific excavation/exploration of the site can bring out the true picture and it is hoped that it would not only substantiate our assumption but will also bring out many evidences of Mauryan structures and will also help to locate the site of ancient Pataliputra.

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DETALIS OF EXISTING ASOKAN PILLARS

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S.N.	Location	Length of Shaft	Base	Top	Inscription	Capital	Remarks
1.	Kolhua (Vaishali)	36 Feet	4 Feet 2 inches	3 Feet 1 inch	—	Single Lion	Believed to be one of the earliest.
2.	Lauria Areraj	36 Feet 5 inches	3 Feet 5.8 inches	3 Feet 1.7 inches	Inscribed	—	Edicts in North-18 Lines, South-23 Lines
3.	Lauria Nandangarh	32 Feet 9.5 inches	2 Feet 11.5 inches	2 Feet 2.26 inches	Inscribed	Lion Capital	Capital 6′10″ Bell Shaped
4.	Sarnath	15.25 Meters	2 Feet 3.9 inches	1 Feet 9.75 inches	Inscribed	Four lion seated	Now only 2.03 M
5.	Allahbad	35 Feet	2 Feet 11 inches	2 Feet 2 inches	Inscribed (Known as Queen's Edict)	—	Brought to Allahabad from Kausambi by Akbar
6.	Rampurva (Two Pillars)	Both Pillars Buried in water	Edicts Similar to Serial 2 & 3		Demaged bull and	Lion Capital found	
7.	Sanchi	—	—	—	Inscribed	Four lion seated back to back	Only lower portion of Pillar in-situ.
8.	Delhi (a) Ex Topra (b) Ex Shivaliks	42 feet 7 inches 10.00 Meters	3 feet 2.8 inches Details not known	1 feet 1.2 inches	All seven edicts Inscribed		Also known as Golden Pillar Both Pillars removed from Ropar & Shivalik Hills Near Dehradun by Feroz Shah Tuglak
9.	Rummindei						
10.	Nilgiva						
11.	Bakror (Near Bodh Gaya)						
12.	Taxila						
13.	Lathia						
14.	Sankisa						
15.	Arrah/Masarh						

GENERAL REMARKS

(a) Details of Pillars not available, as either Shaft or Capital have not been found

(b) Locations of the pillars, based on accounts of Chinese travellers and other sources.

(c) Capitals *i.e.* Lion, Bull, Horse and Elephant represents four parts of Buddha's life *i.e.* Incarnation, Enligtenment, Dharma Chakraparivartan and Mahaparinirvana.

(d) Only seven Aśokan Pillars have been found to have edicts, The Asokan Pillar ex Topra (Ropar) has maxmimum edicts ie seven.

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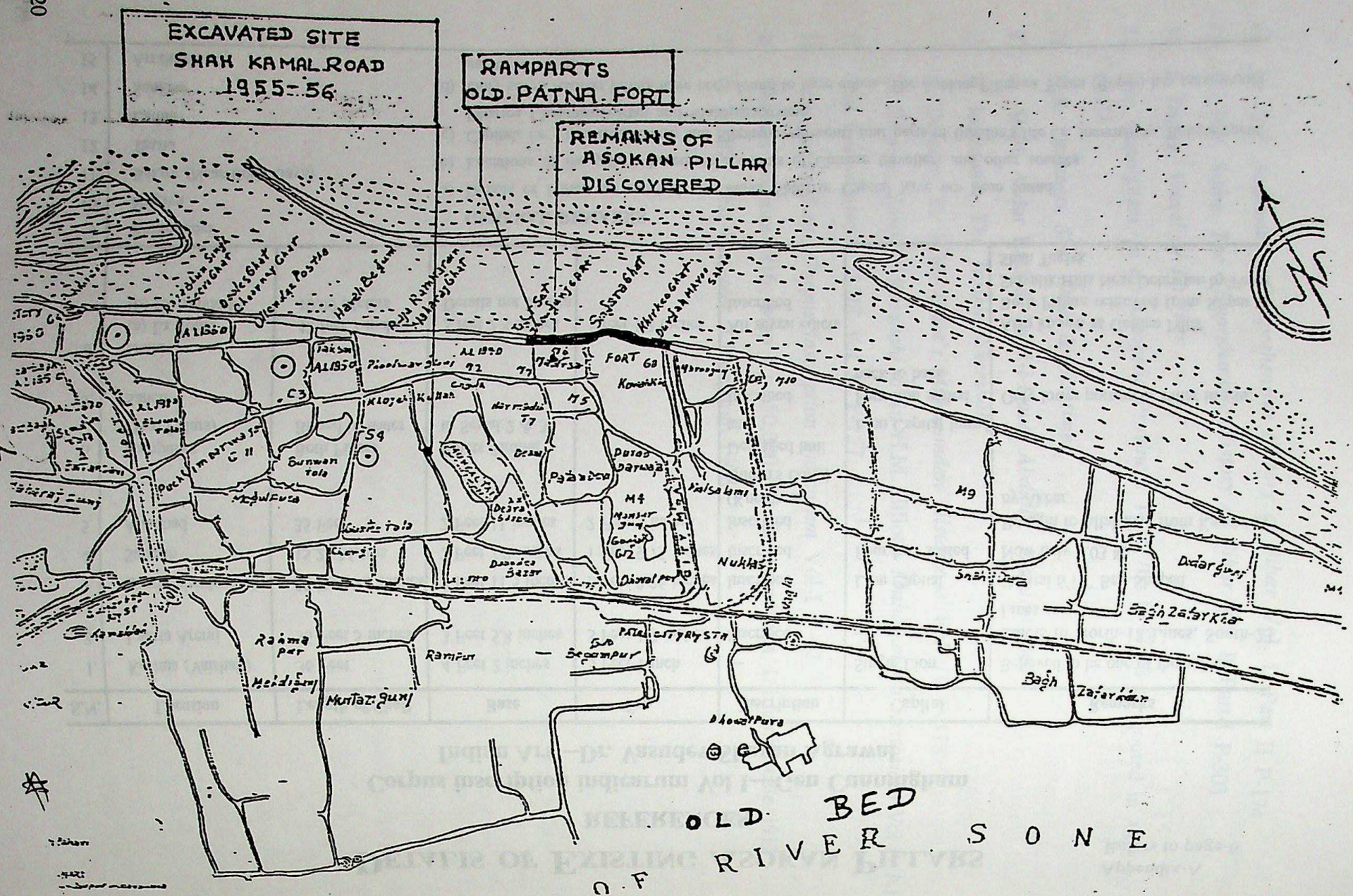

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RECENT DISCOVERY OF ROULETTED WARE IN MAHASTHANGARH REGION OF BANGLADESH : AN ARCHAEOLOGICAL PERSPECTIVE

SHAH SUFI MOSTAFIZUR RAHMAN

During the Early Historic Period (*c.* 500 B.C. to 500 A.D.), South Asia witnessed the emergence of cities in the Ganga Valley and in many other fertile tracts (Allchin 1995). The shift from village-based communities to urban socities led to the establishment of internal and external trade routes, and allowed rapid inter-regional distribution of ideas and artefacts through the growth of communication and increased mobility of people. The extension of trade network had far reaching implications, and was accompanied by the introduction of currency, a wide range of ceramics and specialized arts and crafts (Kosambi 1965, Ghosh 1973 ; Sharma 1983). The ceramic art of this period, which suggests that there was a demand for very fine products from the rich urban communities, is a useful indicator for determining the trade and mobility of people between various regions in South Asia (Ray 1994). One of the classical ceramics of this preiod is Rouletted Ware, which has been reported from a large number of sites in India, Sri Lanka and Southeast Asia. This Ware has become a valuable source for understanding the trade and exchange network across the Indian Ocean during the Early Historic period (Ray 1994 ; Clover 1996).

In the context of Bangladesh, the region around Mahasthangarh has produced substantial evidence for understanding the social, political and economic organizations during the Early Historic period. Although the Mahasthangarh region has copious evidences for studying various aspects of Early Historic culture such as trade, exchange network and town planing, it has not received due academic attention as have the other parts of South Asia.

As new data is coming in from fresh explorations and excavations, the study of Early Historic trade network across the Indian Ocean has gained importance in the recent past (Basa 1996 ; Begley 1991 ; Glover 1996 ; Ray 1994). Against this background, with a view to understanding the role of Bangladesh in this trade network. The author undertook a systematic survey and trial excavations around Mahasthangarh in search of fresh evidence. The trial excavations carried out near the fringe of the fortification at Mahasthangarh. have

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produced a few sherds of Rouletted Ware for the first time in Bangladesh. This discovery provides sufficent proof for the participation of this region in particular and Bangladesh in general, in the growing trade network of the Early Historic period, which connected many other urban centres in South Asia.

This paper in an attempt to understand the role of Mahasthangarh in the development of Early trade and exchange in the pan-Asian context in the light of recent discovery of Rouletted Ware. It is based on the evidence recovered from field investigations by the author during 1996-98.

Mahasthangarh is a complex of sites located in the pleistocene landscape known as Barind tract on the western bank of the river Karatoya in the district of Bogra (Rahman 1997).

THE SITES AND DISCOVERY OF ROULETTED WARE

Mahasthangarh Citadel (24°57′N : 89°21′E)

The citadel is situated at village Mahasthan, 12 km north of Bogra town and on the western side of Dhaka-Rangpur highway. The fort is surrounded by the river Karatoya in the east whereas an ancient moat protects the other three sides. The massive mud and brick built fortified citadel measures about 1523 m × 1371 m with a height of 4.5 m from the surrounding level. Potsherds, brickbats and other artefacts are scattered all over the fortified area. At present, the citadel is occupied by modern settlement and is under intensive cultivation.

Some of the earlier findings from the citadel are : an early Brahmi inscription of *c.* 3rd century B.C. (Bhandarkar 1934), punch-marked and cast coins of silver and copper in hoards (Hossain 1996), a large number of semi-precious stone beads (Rahman 1997), glass beads, NBPW (Miah 1988 ; Rahman 1998), Black Slipped Ware (burnished and unburnished), Sunga terracotta plaques and structural remains of Early Historic and Early Medieval periods.

During the recent explorations, two sherds of Rouletted Ware along with a large number of Northern Black Polished Ware (NBPW) and Black Slipped Ware (burnished and unburnished) and a few semi-precious stone and glass beads have been found from a pit dug by local people for setting of a water pump on the north-western corner of the citadel, at a depth of about 2 m.

The Rouletted Ware from Mahasthangarh shows following characters : the core is fine and is of dark grey colour, and the surface is applied with a lustrous black slip. The design knows as 'rouletted' consist of indented concentric circles.

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Ramsahar (24°56′N : 89°21′E) :

The site is located in the eastern part of village Ramsahar in the Goqul union of Bogra district, about 4 km south-west of Mahasthan fort. A road from Goqul Bazar to Ramsahar Mazar passes through the site. The site is surrounded by ponds and cultivated land. The river Karatoya flows at a distance of 1 km to the east of the site. The ancient mound which is now occupied by villagers, measures about 600 m × 300 m and rises to a height of 5-7 m from the surrounding ground level. Early historic postsherds and brickbats are found all over the mound.

One sherd of Rouletted Ware along with NBPW, Black Slipped Ware (burnished and unburnished), typical Early Historic glass beads, was found from a depth of about 2 m. while digging for the foundation of a school building. Rouletted Ware sherd from this site possesses the following features : the core is of grey colour, the surface is applied with a lustrous black slip and the fabric is fine. The flat sherd indicates that it is from the base portion of a dish. Two bands of diagnostic indented concentric circles are present on the inner surface.

Gobinda Bhita (24°59′N : 89°21′E) :

The site can be considered as a satellite settlement to the fortified town of Mahasthangarh as it is located in its close proximity, just on the north bank of the northern moat, in the village Mahasthan of Rainagar union in Bogra district. The Mahasthan-Shibganj road passes through the site. The river Karatoya flows on the eastern side of the site. Ancient ponds are found in the west and cultivated lands on the south-west.

Broadly, the site measures 300 m north to south and 400 m east to west with a height ranging between 5-8 m. A temple of Early Medieval period (Govinda Bhita temple) is one of the important landmarks of the site. The site is highly disturbed due to human interference. Some of the modern buildings constructed on the site are a museum complex, quarters for the officials of the Directorate of Archaeology, a guest house and a mosque.

A trial trench measuring one square metre, was excavated in the the north eastern corner of the site. The trench revealed three sherds of Rouletted Ware along with a large quantity of NBPW, Black Slipped Ware (Burnished and unburnished). The Rouletted Ware of Govinda Bhita has the following characteristics : the core is of dark grey to light grey colour. The surface is applied with a lustrous black slip and the fabric is fine. The diagnostic concentric circles of 'rouletted' design are present.

ROULETTED WARE : DISTRIBUTION AND CHARACTERISTICS

Rouletted Ware was first recognized at Arikamedu in South India (Wheeler *et. al.* 1946). Since then this distinctive ware has been reported from a number of sites in South

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India. Some of the well-known sites are Brahmagiri, Chandravalli, Amaravati, Salihundam, Kaveripatinam, Uraiyur, Nattamedu, Sengamedu and Kanchipuram (Rahman 1989 : 258). Similarly, in eastern India Chandraketugarh (*IAR* 1957-58 : 52, 1959-60 : 51, 1963-64 : 64), Mangalkot (*IAR* 1986-87 : 97), Tamluk (*IAR* 1954-55 : 19), Atghara (*IAR* 1957-58 : 70), Barol (*IAR* 1957-58 : 70), Harinarayanpur (*IAR* 1956-57 : 81), Barrackpur-Belgharia area (Chakrabarti *et. al.* 1994 : 141), Adi Saptagram (*IAR* 1961-2 : 59) Rajghat (Gogte 1997), Sisupalgarh (Lal 1949), Manikapatna (Pradhan *et al.* 1996) and Radhanagar (Mishra n. d.) and in western Deccan, Nasik (Sankalia and Deo 1955) have produced Rouletted Ware. The ware has been discovered at Anuradhapura (Deraniyagala and Abeyratne 1997), Mantai and Kantarodai in Sri Lanka (Begley 1986 : 23-24), at Beikthano in Burma (Aung Thaw 1968, Aung Thwin 1987), at Bukit Tengku Lembu in Malayasia (Sieveking 1962), at Kobak Kendal and Cibutak in Java (Walker and Santoso 1977), Sembiran in Bali (Ardika and Bellwood 1991) and at Tra Kieu (Yamagata and Glover 1994) in Vietnam.

Rouletted Ware vessel type is a dish with thick incurved rim, contiguous body and base without any foot, smooth lustrous surface, showing a variety of colour and indented concentric circular decoration on the interior surface of the base (Wheeler *et al.* 1946), Types 1 and 2 and their variants, Fig. 12 and Pls. XXIIB, XXV and XXVI). The pattern consists of one to three bands of concentric circles, each band containing three to ten rows of closely placed indentations which look like tiny dots, strokes, wedges, triangles or other shapes (Begley 1986 : 48). The pottery is essentially a fine ware but there are also a few coarse varieties. It was obviously wheel-turned as the uniformity of shape indicates (Begley 1988).

The Indian RW is named after its decoration, which, no doubt, is its most distinctive feature. Indian scholars borrowed the term 'rouletting' from classical archaeology, where it is widely used to describe the process of making indented concentric or spiral linear patterns on pottery, by means of a small toothed wheel called a roulette. The patterns are produced by the continuous rolling motion of the roulette when it is held against the revolving clay vessel, and typically are arranged in narrow bands consisting of one more rows of evenly or closely spaced small indented marks (Begley 1986 : 47). Begley (1986 : 48-49, 1988 : 440) argues that the decoration on some of the RW at Arikamedu was most probably produced by a different method, which she refers to as 'chattering'. According to her, these designs are produced by the continuous flicking motion of a tool with one or more long thin points, when it is held against the surface of the clay vessel rotating on the potter's wheel. She mentions that both the techniques were used in Mediterranean region during Early Historic period.

Vishwas D. Gogte (1997) argues that RW is the another variety of NBPW with an indented circular decoration. He compared the results of chemical analysis of the lustrous

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black slip of NBPW (Gogte 1989) and RW (Wheeler *et al.* 1946) and found close resemblance.

Considering the stylistic attributes with the classical Roman world, it was thought that the Arikamedu RW was imported from the Mediterranean region and dated to 1st to 2nd century A.D. (Wheeler *et al.* 1946 : 46). Wheeler (1946, 1976) also states that the better examples of RW from Arikamedu are doubts imported and cruder varieties seem to be local imitations. Begley (1983, 1988) is of the opinion that the RW of Arikamedu porbably was produced locally, but the technique of 'rouletting' seems to have been introduced from the Mediterranean region, since it was not known in South India at that time. She also predates the RW of Arikamedu to 2nd to 1st century B.C. The radiocarbon dates for the ceramics at Anuradhapura in Sri Lanka have pushed back its beginning firmly within the 3rd century B.C. (Deraniyagala and Abeyratne 1997).

On comparing the characteristics rare earth elements present in RW from Arikamedu and Koraikadu in India, Anuradhapura in Sri Lanka and Sembiran in Indonesia, Ardika et. al. (1993) have concluded that RW could have been produced from a single source of clay. According to Vishwas D. Gogte (1997) the ware was produced in the Chandraketugarh-Tamluk region of the lower Ganga Valley in eastern India. His hypothesis is based on X-ray diffraction analysis of the clay local to the sites which yielded RW sherds. According to him RW reported from Arikamedu, Alagankulam, Kottapatnam, Manikpatna, Sisupalgarh, Nasik, Tamluk and Chandraketugarh in India and Tra Kieu in Vietnam shows similar mineral pattern. He adds that the clays of South India and South-east Asia are mineralogically different from those of the RW. However, the clays of the Ganga Plain have mineral pattern similar to that of RW. He opines that RW was produced in the Chandraketugarh and Tamluk area and was dispersed into South India and South-east Asia by Buddhist monks and traders from north-eastern India.

CONCLUSIONS

The discovery of RW from the region of Mahasthangarh has included Bangladesh in the distribution map of RW along with India, Sri Lanka and South-east Asia. According to Wheeler *et. al.* (1946) and Begley (1988) Arikamedu RW was directly or indirectly related with the Mediterranean region. So, during the Early Historic period Bangladesh might have had some connection with the region. On the contrary, if we accept Vishwas D. Gogte's (1997) hypothesis that Chandraketugarh-Tamluk region was the epicentre for producing RW, then there is a possibility that the Mahasthangarh region being in the same geographical territory was an area dispersed of the ware from nearly Chandraketugarh-Tamluk region. However the data available at present are sufficient to stress that Mahasthangarh was a

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part of 'World Trading System' (Glover 1989 ; Basa 1994-95) along with India, Sri Lanka, South-east Asia and the Mediterranean region.

Being a diagnostic type, the RW is an important chronological marker for many historical sites, For examples, Arikamedu between 2nd century to 1st century B.C. (Begley 1983 : 478), Tamluk *c.* 1st to 2nd century A.D. (*IAR* 1954-55 : 20), Chandraketugarh, Sungha-Kushana period (*IAR* 1959-60 : 51), Mangalkot, Sungha-Kushana period (*IAR* 1986-87 : 97) and Anuradhapura in Sri Lanka to 3rd century B.C. (Deraniyagala and Abeyratne 1997-27).

From the trial trench at Govinda Bhita three sherds of RW have been found along with NBPW from a depth of 1.83 m to 2.19 m. The total deposit of the habitation is 2.60 m NBPW, Black Slipped Ware (Burnished and Unburnished) and other material remains were recovered from the depth of 1.34 m and they continued to occur from the earliest occupation at this site (2.60 m). At Sisupalgarh and Chandraketugarh RW has been reported from the levels which yielded NBPW (Lal 1949 : 78-79, *IAR* 1956-57 : 29-30). The chronology of NBPW in the middle Ganga Plain ranges between *c.* 700 and 100 B.C. (Roy 1983 : 94-124 ; Lal 1984 : 94), whereas in eastern India the ware appears from *c.* 300 B.C. (Chakrabarti 1992 : 178). In the absence of scientific dates, the chronology of RW from Gobinda Bhita cannot be fixed precisely at this stage. Considering its association with NBPW, the date of the RW at this site can be proposed to *c.* 300 to 200 B.C.

It is worthwhile to mention here that on the basis of a Brahmi inscription found at Mahasthangarh, Dilip. K. Chakrabarti (1992 : 48) and F. R. Allchin (1995 : 133) say that Mahasthangarh was the eastern limit of the Mauryan Empire. A. Ghosh (1973 : 15), B. K. Thapar (1965 : 74), Argue that the occurrance of NBPW is associated with Mauryan imperialism. During Mauryan period there was a well-established trade network in the Indian Subcontinent. In the absence of direct evidence of Mauryan rule in Mahasthangarh, the presence of an early Brahmi inscription, NBPW and RW are suggestive of the extension of the Mauryan hegemony over the Mahasthangarh region.

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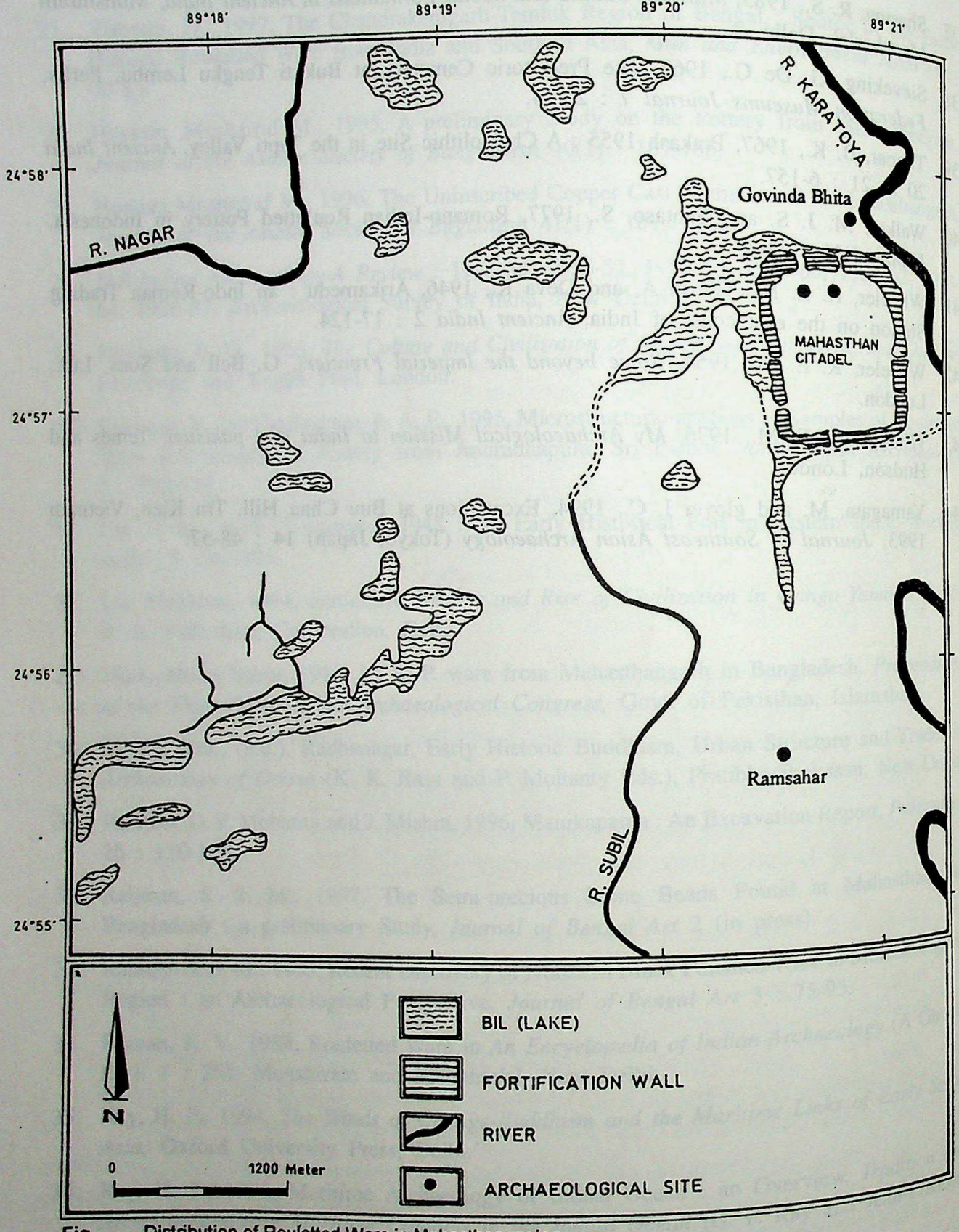

Fig. 2 Distribution of Rouletted Ware in Mahasthan region

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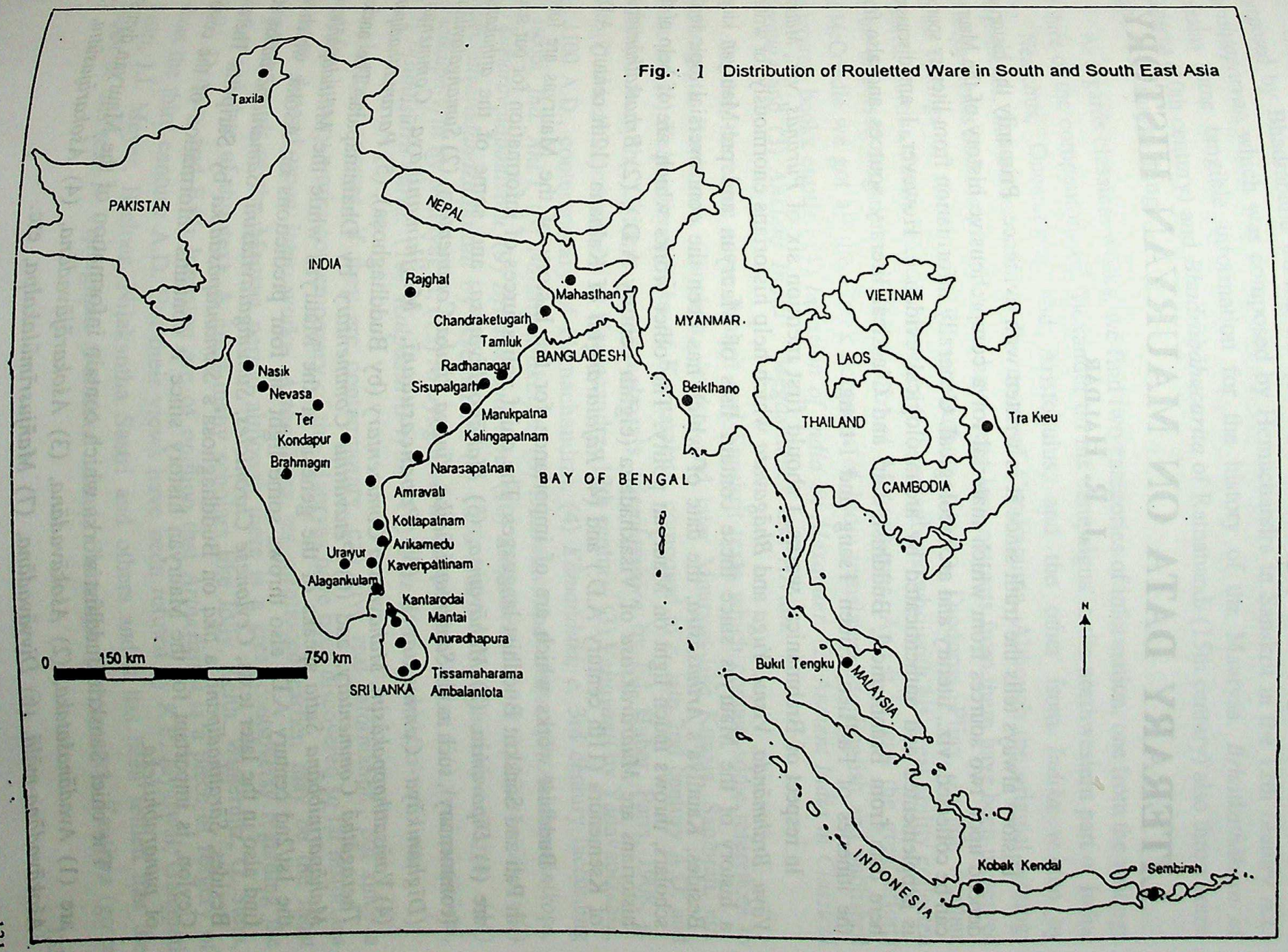

Fig. 1 Distribution of Rouletted Ware in South and South East Asia

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LITERARY DATA ON MAURYAN HISTORY

J. R. HALDAR

History always tells the truth since it is written with evidence. Primarily the historians depend upon two sources from which material for a comprehensive history of the Mauryas can be collected, viz., literary and archaeological. Generally information from literary sources is supplemented and authenticated by archaeological evidence. However, I am discussing here data from Brahmanical, Buddhist, Jain and Classical literary sources and also from the itineries of Fa-Hien, Hiuen Tsang and I-tsing.

In respect of Brahmanical works, I should first mention six of *Purāṇas*, viz., *Matsya, Vāyu, Brahmāṇḍa, Viṣṇu, Yuga* and *Bhāgavata* which help historians enormously for writing a history of the Mauryas since these contain lists of Mauryan and pre-Mauryan kings. Besides, Kautilya's *Arthaśāstra,* the date of which has been the controversial topic to the scholars, throws much light on Mauryan polity. The other works which are of help of the historians are *Mudrārākṣasa* of Viśākhādatta (eighth century A.D.), (2) *Bṛhatkathāmañjarī* of Kṣemendra (11th century A.D.) and (4) *Rājataraṅginī* of Kalhana (12th century A.D.).

Buddhist works which are of importance for the history of the Mauryas are found in Pali and Sanskrit Buddhist languages. The chief pali sources of information for our study are (1) *Dīpavaṁsa,* (2) *Mahāvaṁsa,* (3) *Mahābodhivaṁsa,* and some of the *aṭṭhakathās* (commentary), such as (1) *Samantapāsādika, Vinaya Piṭaka Commentary,* (2) *Sumaṅgalavilāsinī (Dīghanikāya Commentary),* (3) *Papañcasudanī, Majjhimanikāya Commentary,* (4) *Vaṁsatthappakāsinī, Mahāvaṁsa Commentary* (by Buddhaghoṣa), (5) *Paramatthadīpanī, Theragāthā Commentary,* and (6) *Petavatthu Commentary* by Dhammapala. The ancient *Mahāparinibbāna Sutta* speaks of the genesis of the Mauryas while the *Milindapañha* of the 1st/2nd century A.D. also throws some light on four predictions on Aśoka, which we find also in the later texts, *Ceylonese Chronicles, Sumaṅgalavilāsinī, Samantapāsādika,* etc. Besides, *Sāratthadīpanī,* a *ṭikā* on Buddhaghosa's *Samantapāsādika* by Sariputta Thera of Ceylon, is important for the Mauryan history since it contains information of the custom of *punarabhiṣeka.*

The chief Sanskrit Buddhist works which contain information of the Mauryan dynasty are (1) *Avadānaśataka,* (2) *Aśokāvadāna,* (3) *Aśokarājāvadāna,* (4) *Aśokarājasūtra,* (5) *Aśokāvadāna-mālā,* (6) *Divyāvadāna,* (7) *Mañjusrīmūlakalpa,* etc.

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Of the Jain works, *Kalpasūtra* is very important since it was believed to have been composed by Bhadrabahu during the period of Candragupta. Among the later Jain works *Pariśiṣṭaparvan* which was composed by Hemachandra in Sanskrit in the 12th century A.D contains some tangible information for the history of the Mauryas. *Bṛhatkathākoṣa* of Hariṣena (10th century) and *Bhadrabāhucarita* of Ratnanandi (15th century) also throw some light on Mauryan kings.

As regards classical works, we find two categories of information, one from the writings of three of the companions of Alexander on his campaigns in the northwestern part of India, *viz.*, Nearchus, Onesicritus, and Aristobulus, and the other from *Indika* written by Megasthenes, the ambassador to the court of Candragupta. Although the original writings of Megasthenes and his predecessors have been lost, extracts from them have been preserved in the writings of Greek and Roman authors, Strabo, Diodorus, Pliny, Arrian, Appian, Plutarch, Curtius, Justin, etc. Credit goes to Schwanbeck who with his great ability collected all the dispersed fragments of the *Indika* of Megasthenes. And it is with the great efforts of McCrindle we got all the Greek accounts of India translated into English and published in separate books entitled (1) *Invasion of India by Alexander,* (2) *Ancient India in Classical literature* and (3) *Ancient India : Megasthenes* and *Arrian.*

Besides, there are some Prakrit and Sanskrit texts which contain some references to Candragupta, Bindusara, Cānakya, Aśoka, and later Mauryas like Kuṇāla, Samprati, etc. These are (1) *Kalpanāmaṇḍiṭīka* of Kumaralata, composed in *c.* late 2nd century A.D. and translated from the Chinese as Asvaghosa's *Sūtrālaṁkāra* by Ed. Huber, Paris, 1908, p. 126, (2) *Abhidhānacintāmaṇi* of Hemacandra, 12th century, (3) *Vaijayanti* by Yādavaprakāśa, (*c.* 1100 A.D., contemporary of Hemachandra), (4) *Kāmandaki, c.* 3rd century (according to Jacobi, *Ind. Ant.),* (5) *Pāṭaliputrakalpa,* (6) *Dharmavihipayaraṇa,* (7) *Akkanamanikoṣa,* (8) *Kumāravalapadivolu,* (9) *Bṛhat-kalpacūrṇi,* (10) *Kalpakiraṇāvalī,* (11) *Nisithacūrṇi,* (12) *Bodhisattvāvadānakalpalatā* by Kṣemendra (c. 1052 A.D.), (13) *Bṛhatkalpa-bhāṣya,* (14) *Bṛhatkalpa-vṛtti* by Malayagiri, (15) *Anuyogadvāra-vṛtti* by Haribhadra, (16) *Āvaśyaka-cūrni,* (17) *Nisithasūtra-cūrni,* (18) *Kalpasūtra-vṛtti,* (19) *Viśesāvaśyakabhāṣya-vrtti,* etc.

Literary sources, if they are contemporary, can give real information ; but since a very few literary works contemporary of the Mauryas have been discovered so far historians have to depend upon later works. *Arthaśāstra,* as mentioned earlier, may be the most important work of the Maurya period although there is a great controversy regarding the author and date of this text. A great many scholars like Jolly, Keith, Winternitz, O. Stein, F.W. Thomas, and E.H. Johnston are of opinion that *Arthaśāstra* is a piece of forgery of about the third century A.D. But their views have been refuted by K.P. Jayaswal, Ganapati Sastri, J.J. Meyer, Breloer, Nilakantha Sastri and others and it has been settled that the author of this text is Viṣṇugupta (Personal name), Chāṇakya (petronymic), Kauṭilya (gotra

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of family name), the famous Chancellor of the first Maurya emperor Candragupta since not only the main features of government set forth in the book wonderfully agree with the description of Megasthenes but also the inscriptions of Aśoka and Rudradaman (150 A.D.) mention such technical terms as are found in the *Arthaśāstra*. However, the very name of this text suggests that this is a work on political economy and the art of government which has fifteen *adhikaraṇas* or books, each subdivided into numerous chapters, dealing with duties of kings, administration of public affairs, law and judiciary, relation with foreign powers, methods of warfare, secret means to injure enemy, espionage, etc. The other Sanskrit works of this period are No. (1) *Kāmasūtra* of Vatsyayana which resembles *Arthaśāstra* in language and style and No. (2) *Nāṭyaśātra* of Bharata.

In regard to the Prakrit text of the period, mention may be made of *Kalpasūtra*, the author of which is Bhadrabahu, the sixth Sthavira after Mahavira and disciple of Yaśodhara, who lived and wrote during the reign of Candragupta and died according to Hemachandra in the sixteenth year of Candragupta's reign. It deals with Jina Charita (list of Jinas), Sthavirāvali (list of Sthavira), etc.

All the canonical Pali texts were compiled at the 2nd Buddhist Council held during the reign of Kālāśoka probably in 386 B.C. The 3rd Buddhist Council held under the Presidentship of Maudgaliputra Tisya during the Period of Aśoka, i.e. 17 years after his accession compiled only one important Pali work the *Kathāvatthu* which contains the Points of Controversy. It is generally accepted that except *Arthaśāstra* all the contemporary literary works of the Mauryan period do not give us much information of Mauryan kingdom and its administration.

However, we shall see now how the texts of the later period as mentioned above give us information of early and later Mauryas. The *Mudrārākṣasa* of Viśākhādatta which is a work of the 8th century A.D. says in its opening verse about the extermination of the Nanda dynasty by Viṣṇugupta. This text and *Mahāvaṁsaṭīkā* contain stories of how Cāṇakya avenged the humiliation suffered by him at the hands of the last Nanda king by using Candragupta as a tool and established the latter in the throne of Magadha in c. 326 or 325 B.C. Besides the *Mudrārākṣasa* and *Mahāvaṁsaṭīkā*, the *Milindapañha*, *Pariśiṣṭaparvan* and the *Purāṇas* also have references to the conflict between Candragupta and the last Nanda. The *Mūdrārākṣasa* describes Candragupta as *Mauryasuta (Mauryaputra)* (in Act II) and *Nandanvaya* ("one of Nanda descent") (in Act IV). Dhuṇḍirāja, the commentator on the *Mudrārākṣasa* says that Candragupta was the eldest son of Maurya who was the son of the Nanda king Sarvarthasiddha by Mura, daughter of Vrishala Sudra. In this text *(Mudrārākṣasa)*, Cāṇakya himself addresses Candragupta as a Vrishala or Sudra. In the Act VI the text refers to the title 'Piadamsana' used by Candragupta, which seems to be 'Piyadassa' adopted by Aśoka and his son Dasaratha thus suggesting that Aśoka continued

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this title assumed by Candragupta. However, the historians express differences of opinion regarding the historicity of the *Mudrārākṣasa.*

Mañjuśrīmūlakalpa which is the Sanskrit Buddhist text of the period of 8th century mentions only one Nanda king who gave away wealth to the Brahmanas. However, fall of the Nanda king was due to alienation of the feeling of the whole body of ministers inadvertently caused by him. The verse 424 of this text says that the founder of the Nanda family is called 'the leading vileman' *(nīcamukhya).*

In Verse No. 441 this text describes Candragupta as 'a very prosperous lord of the earth', 'true to his word' and 'pious soul' *(mahābhogī satyāsandhās'cha dharmātmā sa mahīpatiḥ)*; but he is said to have killed many living beings on the advice of a spiritual guide *(akalyānamitram āgamya kṛitaṁ prāṇivadhaṁ bahu).*

According to *Mūlakalpa,* Candragupta died after a successful reign of 24 years and was succeeded by his son Bindusara. The text says that Bindusara was a minor when he was placed on the throne by his father. Bindusara reigned for 70 years according to verse No. 449 of this text ; but it is impossible ; according to the *Purāṇas,* he ruled for 25 years while the Buddhist tradition says that his reign lasted for 28 years. *Mūlakalpa* represents Cāṇakya as his (Bindusara's) prime-minister. But the Jain Prakrit texts *Vyavahārasūtra, Nisithasūtra-cūrṇi* and *Maraṇasamādhi* state that Subaṁdhu was Bindusara's minister who had burnt Cāṇakya alive out of envy when Cāṇakya was practising meditation in a hut abandoning food. According to the *Āvaśyakacūrṇi, Nisithasūtra-bhāṣya, Ācāraṅga-cūrṇi, Nisīthasūtra-cūrṇi, Ācāraṅga-vṛtti* by Silanka, *Daśavaikālikacūrṇi,* Cāṇakya was a son of Caṅia, a Brahmana of the village of Caṇiyaggāma in Golla country which may be identified with Goli situated on the bank of Gallaru, a tributary of Kistana in Guntur District.

However, according to *Mūlakalpa,* Bindusara was born in Nandarajakula. The *Pariśiṣṭaparva, Āvaśyaka* and *Vividha-Tirthakalpa* represent the first Nanda king 'as the son of a courtesan by a barber' *(nāpita-gaṇikā-sutaḥ).* If the statement of *Mudrārākṣasa* and *Mūlakalpa* is true Candragupta and Bindusara were born in Nanda family who are not Kṣatriyas. But Candragupta's connection with Moriyas or Mayuras (peacock) and Mayuraposhakas (peacock tamer) as mentioned in the *Pariśiṣṭaparvan* remind us of the Moriyas as Kṣatriyas of Pipphalivana of the *Mahāparinirvāṇasūtra* and according to the *Mahāvaṁsaṭīkā* as a Himalayan offshoot of the Sakyasś. Hiuen Tsang narrates a legend which connects the Sakya-Mauryas with the country of Uddyana.[1] In support of this the *Āvaśyaka-cūrṇi, Daśaśrutaskandha-cūrṇi, Nishītha-cūrṇi,* etc., state that Camdautta or Candragupta was a son of a peacock keeper *(moraposaga-mayuraposaka),* because of which in the *Āvaśyaka-vṛtti* and *Āvaśyaka-cūrṇi* we find references to Muriyavaṁsa or Mauryavaṁsa.

1. Beal, *Buddhist Records,* I, p. 126.

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Therefore the Sanskrit version of the *Bṛhatkathā* and that of the play *Mudrārākṣasa* and *Mūlakalpa* and Greek version of Justin referring to Sandrakottas (Candragupta) as a man of humble origin have created much confusion to the historians and scholars present here who may find out the solution in the subsequent session.

Regarding Bindusara much information is not collected from the literary sources so far. The Prakrit texts *Nisīthasūtra-cūrṇi, Nisīthasūtra-bhāṣya, Bṛihatkalpa-bhāṣya, Viśeṣāvaśyaka-bhāṣya, Daśavaikālika-cūrṇi, Kalpasūtra-vṛtti* and *Anuyogadvāra-vṛtti* mention Bindusara as a son of Camdagutta, father of Asoga and grandfather of Kuṇāla.

Now we shall see how literary sources help us to solve the problem of chronology of the Mauryan kings. Candragupta was a king contemporary of Alexander since Plutarch says that Alexander the Great is supposed to have received in the year 326 B.C. in the Punjab the visit of a young person from India, who was named Santrakots by Plutarch and Sandrakottos of Palibodra by Strabo. And when Sandrakottos has been correctly identified by Sir William Jones with Candragupta, the founder of the Mauryan dynasty, as noted in the *Purāṇas,* a door has opened for the historians to solve the chronological problem of the Mauryan history. According to Plutarch, Candragupta was contemporary of Alexander and in the opinion of Strabo, a contemporary of Seleucus Nikator in the later period, since he says that Seleucus entered with Candragupta into a treaty and matrimonial alliance and ceded to Candragupta a tract of land to the west of the Indus and received from him 500 elephants. However, the statement of Plutarch suggests that sometime after the death of Alexander (i.e. after 323 B.C.) Candragupta ascended the throne. There is no clue in the Classical accounts to prove that Candragupta ascended the throne just after the departure of Alexander. According to some scholars, Candragupta could not ascend the throne till the prefects of Alexander (i.e. Eudemos and Peithon) were alive in the Punjab upto 317 B.C. They have generally accepted that after the departure of Eudemos and Peithan from the Punjab and Sindh Candragupta ascended the throne in 317 B.C. The Cantonese dotted Record of Buddha's Mahaparinirvana is also taken into consideration by the scholars in determining the Chronology of the Mauryas while they discuss the matter with the statement of *Dīpavaṁsa* and *Mahāvaṁsa* that Aśoka was consecreted 218 years after the Buddha's Mahaparinirvana. But there are some Scholars who do not accept the dotted record of Canton and the Buddhist Chronicles. However, since the Buddhist literary sources contain references to Mauryan kings these must be studied scientifically in tackling the problem of Mauryan Chronology. The *Purāṇas* state that Candragupta and Bindusara reigned for 24 years and 25 years respectively. So they together reigned for 49 years. Takakusu[2] has proposed 486 B.C. as the probable date of Mahaparinirvana on the strength of the 'Dotted Record of Canton'. The people of Canton were to preserve the date of Mahaparinirvana,

2. Alahakoon, Hector, *The Later mauryas 232 B.C. to 180 B.C.* ; 1980, p. 36 and note 4.

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by putting a dot at every anniversary of the Buddha. And thus there were 975 dots upto 489 A.D. and if we count 975 dots upto 489 A.D. the date of Mahaparinirvana will fall in 486 B.C. (975–489=486 B.C.).

In accordance with the *Dīpavaṁsa*[3] and *Mahāvaṁsa*[4], Aśoka was consecrated 218 years after Mahaparinirvana of the Buddha. So Aśoka was consecrated in 268 B.C. (486 B.C.—218). Thus if we add to this 49 (24+25 regnal years of Candragupta and Bindusara respectively) Candragupta's accession will fall in 317 B.C. which is agreeable date when Eudemos and Peithan, the last prefects of Alexander were no more in this country. But actually Candragupta ascended the throne sometime earlier than 317 B.C., *i.e.* 321 B.C. if we accept the statement of *Dīpavaṁsa*[5] that Aśoka occupied the throne in the victory of fratricidal war when Mahendra was ten years of age, *i.e.* 4 years before his first consecration.[6] According to *Dīpavaṃsa*[7], Mahendra was 14 years of age at the time of first *abhiṣeka* of Aśoka. Exact date of Mahendra's birth will fall in 282 B.C. if we accept *Dīpavaṁsa*[8] where it is said that Mahendra was born 204 years after the death of the Buddha. If the date of Buddha's death as 486 B.C. is approved by the scholars there is no doubt that Mahendra was born in 282 B.C. (486-204). Thus it appears that Aśoka occupied the throne first in 272 B.C., *i.e.* 10 years after Mahendra's birth, and he was consecrated for the first time in 268 B.C., *i.e.* 218 years after Buddha's Mahaparinirvana (486-218) when Mahendra was of 14 years of age. In this sense the Cantonese Dotted Record and the Buddhist Chronicles may be accepted as correct in determining the correct date of Aśoka's accession in 268 B.C. and thereby Candragupta's accession in 321 B.C.

Again there is a question whether Candragupta ascended the throne earlier than 321 B.C., i.e. 324 B.C. if we accept the statement of the Pali Chronicles that Bindusara reigned for 28 years instead of 25 years as stated in the *Purāṇas*. Aśoka occupied the throne 4 years before his *abhiṣeka*, i.e. in 272 B.C. So 56 years (24+28+4) should be taken into account as the time passed between 268 B.C. and the time of accession of Candragupta. If it is considered favourably it is definite that Candragupta ascended the throne in 324 B.C. (268 B.C. + 56 years). This 324 B.C. for the accession of Candragupta may be correct

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3. VI. 1 :"*Dve satāni ca vassāni aṭṭhārasa vassāni ca/Sambuddhe parinibbute abhisittho, Piyadassano//*

4. VI. 21 : *Jinānibbānato pacchā purā tassābhisekato/Saṭṭhārasam vassasatadvayam evam vijāniam//*

5. VI. 2 :

6. See also *Samantapāsādika* I, p. 70 [*(Mahinda-) kumārassa chuddasavassakāle rājā abhiṣekam papuṇi*]

7. VI. 22.

8. VI. 20, 21.

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because Alexander came in 327 B.C. and according to Plutarch, in 326 B.C. Alexander received a young person named Santrakots who was none other than Candragupta. The Buddhist literary sources therefore seem to record correctly because Alexander and his army did not dare to proceed towards east after the battle with Porus since they heard the news about the huge army of Gangaridai and Prasiai. So this was the time when Alexander and his army gave up hope of conquering whole of India and Candragupta took advantage of it and ascended the throne sometime in 324 B.C. From this point of view the Buddhist literary sources may be taken as authentic since scholars may arrive at conclusion that Candragupta Maurya ascended the throne in 324 B.C. after taking into consideration of the above points from the Buddhist literary sources. However, there may be differences of opinion ; but people cannot ignore totally the Buddhist literary sources in tackling the problem of chronology of the Mauryas since the date of Aśoka's *abhiṣeka* as mentioned in the Buddhist literature is very important in determining the date of accession of Candragupta. In favour of this one can combine with this the statement of Rock Edict XIII which is dated in the 12th year of Aśoka's *abhiṣeka.* According to this, Alexander of Epirus, a Greek ruler, died in 255 B.C. So Aśoka's *abhiṣeka* was taken place sometime in 267-68 B.C. [255 B.C. + 12 (date of RE XIII]. In connection with the problem of Mauryan chronology one should study other references mentioned in various literary works and see how far these sources tally with the inscriptional evidences. Literary records are conflicting; the *Purāṇas* do not tally with the Buddhist text in regard to the date of Bindusara's reign. This creates a problem. However, in the light of the inscriptional evidence, particularly RE XIII, 28 years mentioned in the Buddhist texts as the regnal period of Bindusara may be correct and from this point of view Cantonese dotted record offering 486 B.C. as the date of Mahaparinirvana and 268 B.C. as the date of Aśoka's *abhiṣeka* i.e. 218 years after the date of Mahaparinirvana as offered by the *Dīpavaṁṣa* may be accepted.

In connection with the life and history of Aśoka, the 100th *nidāna,* i.e. the Aśokāvadāna of *Avadānaśataka* is very important. The *Avadānaśataka* may be the work of 2nd century A.D. since it mentions *dinārs* (Sanskrit name of Roman coin *denarius*) in its 83rd *nidāna.* However, *Aśokāvadāna* has eleven *nidanaṣ* It describes how Aśoka was converted and propagated and protected Buddhism. The Sanskrit text of the fundamental portions of this work (*i.e.* 1st, 2nd, 5th and 10th *nidānas)* is preserved in the *Divyāvadāna,* chapters XXVI-XXIX, ed. by E.B. Cowel. The Chinese versions of the *Aśokarājasūtra* and *Aśokarājāvadāna* are nothing but the translations of the *Aśokāvadāna,* and *Aśokāvadānamālā* is the garland of *Avadānas* in verse.

We have already seen how *Dīpavaṁsa, Māhavaṁsa, Samantapāsādika, Sumaṅgalavilasinī, Vaṁsatthappakāsinī* and *Sāratthadīpanī* contain information on *abhiṣeka* of Aśoka. Now we shall see in brief how these texts throw light on other aspects of Aśoka's life.

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Beginning from the conquest of Ujjaini, many events of Aśoka's life are found in the Pali Chronicles and *Samantapāsādika.* The *Samantapāsādika* speaks of Vidisadevi's marriage with Aśoka. This Vinaya Commentary and *Mahāvaṁsa* mention Aśoka's Viceroyalty of Ujjayini, *i.e.*, of Avanti, birth of his son Mahendra by his Vaisya wife Devi at Vidisa, birth of his daughter Sanghamitra by his wife Devi, while the *Dīpavaṁsa* adds to this the events of the death of Bindusara, victory in fratricidal war, and accession to the imperial throne of Magadha when Mahendra was ten years of age. The *Dīpavaṁsa* agrees with the traditions recorded by Buddhaghosa in his *Samantapāsādika* in respect of Aśoka's consecration under the title of 'Aśoka' *(Asokam abhisinchayi)* when Mahendra was of 14 years of age. The said texts including *Mahāvaṁsa* mention Aśoka's adherence to religious sects other than Buddhist, i.e. Ājivikas, Nigranthas, etc. for the first three years of his reign and these three texts also speak of Aśoka's conversion to Buddhism and contact with the Buddhist Sangha in the fourth year of his *abhiṣeka.* These texts and *Aśokāvadāna* also refer to his vow of erecting of 84,000 *ārāmas* in 84,000 towns of Jambudvipa including famous Aśokārāma at the city of Pataliputra. Besides, references to the 3rd Buddhist Council, despatch of Buddhist missions to different parts of India and Suvarnabhumi, mission to the island of Tambapanni (Ceylon), arrival of the Buddhist Mission under the leadership of Mahendra in Ceylon, Visit of Aśoka to Mahābodhi (Bodhgaya) and his return to Pataliputra with a graft from the Bo-tree, despatch of Sanghamitra to Ceylon together with the graft from the Bodhi-tree are found also in these texts. The *Mahābodhivaṁsa,* a Pali translation of Sinhalese text (10th century), gives information of the history of arrival of the Bodhi-tree in Ceylon in detail, the study of which is necessary in respect of socio-economic life developed in India during Mauryan period.

In the *Aśokāvadāna/Divyāvadāna* we see that Susima is the eldest son of Bindusara. The *Mahāvaṁsa* mentions Sumana instead of Susima. According to *Aśokāvadāna,* Asoka's mother was Subhadrangi (Dhamma according to *Mahāvaṁsa Commentary),* a daughter of a Brahman (of Champa), who had another son named Tissa or Sudatta who is otherwise called Vitaśoka or Vigataśoka in the *Divyāvadāna, Theragāthā Commentray* and also in the Liang version of *Aśokāvadāna.* But Aśoka had to kill ninetynine half-brothers except uterine brother Tissa-Vitaśoka to ascend the throne and thus Aśoka is called Caṇḍāśoka in the Buddhist Legends. The problem is that contemporary and authentic records like Aśokan inscriptions do not mention the event of fratricidal war and do not describe Aśoka as Chaṇḍāśoka. Again the historians have to face problem regarding Kalinga War. Aśokan Edict writes about Kalinga War but the Ceylonese Chronicles, *Avadānas,* etc. do not agree with this. In the first *nidāna* of the *Aśokāvadāna* it is said that in his previous birth Aśoka offered handful of dust (earth) to the Buddha and due to this meritorious deed Aśoka was born as a son of king Bindusara. Moreover, the said *Avadāna* says that while Aśoka was born his mother Subhadrangi remarked, 'Now I am without sorrow' (a-śoka). Since the

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legends were written on the basis of heresay it is due to misrepresentation of facts Aśoka has been made at one time Chaṇḍāśoka and at other time Dharmāśoka. Actually, he came on earth to alleviate sorrow of all living beings as his mother got rid of sorrow just at the moment of his birth.

Now there is a question whether Aśoka became bhikkhu or not. It is said that for the last year he has "approached the Sangha with great zeal". This has inspired some scholars to say that such a zealous approach to the Sangha could be equivalent to entering the sangha as a bhikkhu. In support of this the account of Chinese pilgrim I-tsing may be consulted, who mentions an image of Aśoka dressed in the garb of a bhikkhu.

Next question is whether Aśoka built 84,000 stupas as mentioned in the legends. The edicts remain totally silent about this. But Hiuen Tsang says in the 7th century A.D. that he had seen all the ancient stupas in India and even beyond its northern borders as built by Aśoka-rājā and in this connection he speaks of supernatural agency. The poetic version of this story is also found in the 8th century *Mañjuśrīmūlakalpa.*

The history of the Mauryan dynasty is important for its early rulers ; but it is equally important for the history of Aśoka's successors in which one can find out causes of downfall of this great dynasty. The Pali Chronicles and *Samantapāsādika* do not give information of the history of Aśoka's successors while the *Divyāvadāna* giving a list of 6 successors says that Sampadi, the grandson of Aśoka and son of Kuṇāla who was unfit for the throne, succeeeded Aśoka.

The dynastic lists as mentioned in the *Purāṇas,* Taranatha's history and *Rājataraṅgiṇī* create a confusion in solving the problem regarding the immediate successor of Aśoka. The unanimous testimony of the Jain tradition as mentioned in the *Pariśiṣṭaparvan, Bṛhat-Kalpacūrṇi, Kalpa-Kiraṇāvalī, Bodhisattvāvadānakalpalatā,* etc. states that Sampai (Samprati), son of Kuṇāla, ascended the throne after Aśoka since Kuṇāla was blind. The Jain texts *Pariśiṣṭaparvan, Nisīthacūrni, Nisīthasūtra-bhāṣya, Bṛhatkalpa-vṛtti* of Malayagiri and Kṣemakirti, *Kalpasūtra-vṛtti* of Dharmasāgara, Santisāgara and Vinayavijaya, etc. speak highly of Samprati and his reign. He is described as the mightiest ruler of the Maurya dynasty. He reigned at Ujjaini and conquered Suraṭṭha, Aṁdha, Damila, etc., that is, the whole of Dakkhinavaha. According to Jinapraphasuri's *Pāṭaliputra*[9], Samprati was the 'lord of Bharata with its three continents'. Like Aśoka Samprati established official missions. He being Jain lay votary of preceptor Suhatti made Aṁdha, Damila, Kuḍakka, Marahaṭṭa, etc. suitable for the tour of ascetics ; he constructed temples, rest houses, planted trees, groves for the monks. Samprati preached an extreme form of non-violence. His heart was overflowed with the milk of love for all living beings *(Jīvadayā-taraṅgītamanaḥ, Pariśiṣṭa*

9. *Bombay Gazettier I, i. (6-15).*

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Parva). Aśoka's Dharmamahāmātras were not monks ; but samprati's officials were trained monks. Aśoka's middle path gives his people a balanced life. In his Edict Aśoka says, 'the king will forgive them as far as they can be given'. But Samprati's extreme non-violence induced the Andhras to revolt against the Mauryas.

Rājataraṅginī of the 12th century A.D. mentions two names of later Mauryan kings-Jalauka and Damodara. Jalauka succeeded Aśoka in Kashmir. He was an ardent Saiva ruler, built several viharas and Hindu temples. He led the Hindu revival in Kashmir. *Rajatarangini* says that Jalauka expelled the mlecchas from Gandhara, who are heretics or Buddhist. With a view to Hindu revival he took two-fold policy, (1) expulsion of Buddhist settlers from Kashmir and (2) establishment of Agrahara villages by causing the Hindus to migrate and settled down in Kashmir. During Aśoka's time there were seven official departments in Kashmir ; but Jalauka established 18 departments. Jalauka introduced Rājadharma of Yodhisthira. Instead of the policy of Asoka's Dhammavijaya he became an arch enemy of Buddhism because of which buddhist employed sorcerers who wished to eat Jalauka's flesh and Jalauka then compromised with the buddhists and constructed some viharas.

Now there is a problem for the historians to decide whether causes of downfall of the Mauryas are in the religious policies of Samprati and Jalauka or in those of Asoka. Asoka was famous for his liberality. In connection with this Kumaralata's *Kalpanāmaṇḍiṭīkā* of the 2nd century A.D. may be studied and consulted, which says.

'tyāgaśuro narendro sāvaśoko mayura-kuñjaraḥ/
jambudipeśvaro bhutva jāto ardhāmalakeśvara//

"Aśoka, the great Maurya, noted for his liberality, became the lord of half of the *āmalaka* fruit after ruling over Jambudvipa. "This *ardhaāmalaka* according to the 5th *nidāna* of the *Aśokāvadāna* was also offered by Aśoka to the Sangha at the time of his death.

Historians may find causes of Mauryan downfall in it ; but Aśoka was a practical man unlike Samprati. Both of them are in favour of non-violence ; but Aśoka was liberal unlike Samprati. Aśoka's policy in regard to the administration to some extent is secular since his Dharmamahāmātras were not ordained monks. On the other hand Samprati's Dharmamahāmātras were all ordained monks. Therefore all the data from literature may help the historians to come to a conclusion in regard to the very vital problem of the Mauryan dynasty.

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LITERATURE IN THE MAURYA EMPIRE

SATYA RANJAN BANERJEE

Literature in the Maurya Empire (326 B.C.-183 B.C.) was bleak, and we can only infer from the history of literary sources that in the Maurya period from the time of Maurya Candragupta (326-302 B.C) down to the rise of Puṣyamitra, Commander of Bṛhadratha (183 B.C.), the last recorded king of the Maurya empire, the languages prevalent were mainly Sanskrit, Pali and Prakrit, as can be gleaned from the literature written in these three languages. Though the different types of literature found at the time were not, perhaps, very many, it can be guessed quite reasonably that there were some literary documents at the time of the Mauryan empire. From the political atmosphere of the then India, it could be inferred that the Mauryan emperors, perhaps, did not stimulate authors to write books at that time, but we cannot imagine that the Mauryan Kingdom, which was at its height of glory, particularly at the time of Aśoka, did not produce any literature. However, in the present dissertation I shall first discuss the languages of that period, and then their literature.

LANGUAGE

It can be rightly guessed that there were three languages prevalent at the time of the Mauryan empire. Sanskrit, being the foremost of them, had many phases. Historically the origin of Sanskrit is normally traced from Indo-European whose date is tentatively fixed as 2500 B.C. when the Indo-European peoples started migrating from their original home (whatever may be the place—some parts of Europe or Asia) ; they were divided into two courses—one group migrated towards the west in Greece, Rome, Germany and other neighbouring countries, and the other one made their way towards Iran and India. This group ultimately formed the Indo-Iranian unity sometime between 2000-1750 B.C. of which again the Iranian block remained in Iran, ultimately resulting in Avestan and Old Persian literature sometime in the very late 8th-6th centuries B.C., while the other group came to India and started writing their literature to preserve their thoughts and ideas. The earliest document of this group of people, known as Indo-Aryan, is the Ṛgveda whose date is reckoned as the 1500 B.C. From 1500 B.C. down to 400 B.C. we have the Vedic period

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divided into Saṃhitā, Brāhmaṇa, Āraṇyaka and Upaniṣad. It was at the time of Upaniṣads, we had the first reference to a colloquial language known as Prakrit. In the *Samavāyāṅga* and in the *Aupapatikadaśā-sūtra,* we have the reference to Ardhamāgadhī where it is said that lord Mahāvīra preached his doctrines in common man's language known as Ardhamāgadhī (*bhagavaṃ ca ṇaṃ Addha-māgadhīe bhāsāe dhammaṇ āikkhai-Samavāyāṅga* § 98). Almost at the same time Buddha, a contemporary of Mahāvīra, also preached his doctrines in common man's language which was later on known as Pali, though it is said in one couplet that Buddha used to speak his doctrines in common man's language which was *Māgadhī* :

sā Māgadhī mūlabhāsā narā yā yādikappikā/
brāhmaṇa cassutātāpā sambuddhā cāpi bhāsare

These two statements as found in their respective literature gave us this clue that the two lords preached their doctrines in the then spoken languages known as Ardhamāgadhī or (Old) Māgadhī and Māgadhī respectively. The Māgadhī which is known from a later dramatic literature is, perhaps, different from the Māgadhī of Buddha.

Apart from these two languages there was another type of Prakrit found in inscriptional languages. These inscriptional languages are not recorded in any literary documents available today. But these inscriptional languages formed a group by themselves and as such, the modern name Inscriptional Prakrit is given to them. Inscriptions discovered till the time of the Mauryan empire are mainly the inscriptions of Aśoka scattered at different parts of India and each inscription of Aśoka proved the dialectal differences among themselves. Almost at the same time we have another inscription in Sutanuka known as *Sutanukā inscription* which is different from Aśoka's. As this inscription is found in the Eastern zone of India, scholars think that this inscription is influenced by Māgadhī. After that we have also some inscriptions belonging upto 2nd cent. A.D., and these are Heliodoras' inscription and so on. Thus far is the existence of Prakrit during the time of the Mauryan empire.

Side by side with Prakrit and Sanskrit we have another language, known as Pali. Though the name Pali is given to this language, perhaps, at a very later date, Buddha spoke in common man's language, was true. One of the interesting references found in the *Cullavagga* (V.33) or *Vinayapiṭaka* (II.139.1) is the fact that some Buddha's disciples used to speak a type of language other than Buddha's language, which was very near to Vedic Sanskrit. Some of his disciples complained to Buddha that the Lord's language was being mutilated by this speech which is known as *Chanda,* that is, Vedic Sanskrit (*Chāndaso sakkāya*). This incident, perhaps, shows that people used to speak a type of Sanskrit which can be termed as "Popular Sanskrit". As regards Sanskrit, as has already been discussed

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above, it can be said that 600 B.C. was a time of the transformation of the Vedic Sanskrit into the classical one. The language of the Upaniṣad can be called a pre-classical Sanskrit owing to the fact that already the peculiar features of Vedic started dwindling and a new type of Sanskrit which is very much prone to the classical was emerging. But some of Vedic peculiarities were retained and some features of Pre-classical Sanskrit were coming up. It was at that time Mahāvīra was born. After the *Upaniṣadic* age, we have the age of Prātiśākhya and Sūtra literature whose language was very near to Classical Sanskrit rather than the Vedic one. After that, Pāṇini came in 400 B.C. So even though Sanskrit was prevalent at that time, it was the Sanskrit of Pāṇini rather than the Vedic one that was current.

So, in conclusion, from the above survey, we can say that the languages, at the time of the Mauryan empire, were mainly the Classical Sanskrit (interspersed with some sort of Popular Sanskrit, some features of which are also recorded by Pāṇini), Pali (mainly of the old Māgadhī type) and Prakrit, with its inscriptional and literature varieties. There might have been some other languages, but they are not recorded either in literature or in any research document discovered later.

LITERATURE

Sanskrit Literature

From the above discussion, we know that there were three major languages at the time of the Mauryan empire. It is, therefore, expected that there should be three types of literature as represented by these three languages. These types of literature are described below.

From the 4th cent. B.C. onwards, the literature in Sanskrit is not as such very much recorded. We have the last phase of the Vedic literature, particularly of the *sūtra* type. Vedic literature is characterised by some sacrificial rites and as such, the *sūtra* literature grew up at the time of the Mauryan Emperor. That there were sacrifices performed by the people at the time was evident by the fact that Maurya Candragupta used to perform sacrifices by himself, even though the Jain Versions of the story tell us that as he was a Jain, he could not perform any sacrifice which was against the doctrine of Jainism. Though the date of the *sūtra* literature is not certain, it is, at least, accepted that some of the sacrificial texts, such as, *Aśvalāyana-śrauta-sūtra, Kātyāyana-śrauta-sūtra,* and *Śāṃkhyāyana-śrauta-sūtra* were perhaps composed sometime in 400 B.C. in order to direct the people on how to perform sacrifices. Some of the *Prātiśākhyas*, such as *Taittirīya* and *Sāmavedīya*, were also composed at that time.

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It will not be a case of guess work, if we think that the two Epics—the *Rāmāyaṇa* and the *Mahābhārata*—were composed at that time and they were perhaps revised in course of time and finally completed by the 4th cent. A.D.

We do not have any literature on Sanskrit *Kāvya* except some references here and there which tell us that there were some *Kāvya* literature at that time. A *Kāvya* called the *Pātālavijaya* or *Jāmbavatī-vijaya,* quotations from which are available in some anthropological works, is ascribed to Pāṇini. If this *Kāvya* can be attributed to Pāṇini, then it can be said that the *Kāvya*-style of writing was prevalent at the time of Pāṇini in the 4th or 5th cent. B.C. The reference to the *Naṭa-sūtra* by Pāṇini (IV. 3.110) shows that there might have been a book of instructions for the dramatic art as found in Bharata's *Nātya-śāstra* at a later time. It goes without saying that the Aṣṭadhyāyī of Pāṇini was also composed at the early Mauryan empire.

The *Vārttikakāra* of Kātyāyana (250 B.C.) also composed some extra *sūtras* on Pāṇini in order to supplement some of the grammatical features of Sanskrit, not recorded by Pāṇini. If Vararuci and Kātyāyana are the same person, then we can guess that *Vārarucca-saṃgraha* was also composed at that time.

In the later part of the Mauryan empire, Patañjali (150 B.C.) composed his *Mahābhāṣya.* It is a great commentary on the *sūtras* of Pāṇini. This commentary was made for the first time. While explaining the *Vārttika-sūtra hub-ākhyāyikābhyo bahulam* under Pāṇini's *adhikṛtya Kṛte granthe* (IV 3.87), Patañjali in his Mahābhāṣya mentions the names of three *ākhyāyikas,* such as, *Sumanottarā, Bhaimarathī* and *Vāsavadattā.* These three books are lost, but the mentioning of these three books shows that they were very famous, at least, at the time of Patañjali. Patañjali's *Mahābhāṣya* could also be regarded as a text belonging to the last phase of the Mauryan empire. The *Mahābhāṣya* also refers to a poem called *Vārarucaṃ kāvyaṃ* (under VV. 3.101) by Vararuci. In the same place a poet named Jāluka is also mentioned. Is he Aśoka's son Jāluka otherwise known as Kunāla? Piṅgala, perhaps, a contemporary of Patañjali, presupposes in his *Metrics* the existence of some love-lyrics.

Cāṇakya or Kauṭilya was the minister in the court of Candragupta and his *Arthaśāstra* was composed at that time.

Prakrit Literature

Apart from Sanskrit literary documents, we have some specimens of Prakrit literature. Though Mahāvīra's (599-527 B.C.) doctrines were codified much later (454 A.D), there

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were several attempts to put the teachings of Mahāvīra in the form of a book sometime during the Maurya Candragupta. During the time of the Maurya Candragupta, a famous book named Ṛṣibhāṣitāni, one of the oldest works of the Jaina Canonical literature in Ardhamāgadhī seemed to have been composed. This work, classed under *Prakirṇakas*, is, perhaps, the first work where the *Ṛṣis* and *Śramaṇas* were held in high esteem in Vedic, Buddhist and Jain traditions. It was at the time of Candragupta, Bhadrabāhu I (433-357 B.C.) lived and several works like *Kalpasūtra* and *Niryuktis* were generally ascribed to him. Another hymn-book known as the *Uvasaggahara-stotra*, a hymn to Pārśvanātha in five stanzas, is also ascribed to Bhadrabāhu. It was in the time of Candragupta that the Prakrit language was migrated to the South. In the time time of the Maurya Candragupta (in the second century after Mahāvīra's death), there was a severe famine in Pāṭaliputra which lasted for twelve years. Sthavira Bhadrabābu was the head of the undivided Jain community. Under the pressure of the famine, Bhadrabāhu, with a portion of the Jain community, emigrated into the Karṇāṭa country in the south of India. That incident made the Jain monks disperse from Pāṭaliputra to some other places in the South. As the Jain monks live on begging alms, it was not possible for them to seek food from door to door. As a result, the Prakrit language was introduced in the south. This incident later on in the first century A.D. divided the Jains into two schisms, known as Śvetambara and Digambara.

The *Gāthāsaptaśatī* (pkt. *Gāhāsattasaī*) of Hāla might have been composed during the second phase of the Maurya empire, though the date of Hāla varies from the 2nd cent. B.C. to 2nd cent. A.D.

Apart from the above, the major literature in Prakrit found in the Maurya empire is the inscriptions. The inscriptions of Aśoka (3rd cent. B.C.) were numerous. These were scattered all over India from East to North-West as far as Girna, Shahbazgarhi and Manshera in both Brāhmī and Kharoṣṭhī scripts. This inscriptional literature is very solid and form the major literary documents at the time of Aśoka, one of the emperors of the Maurya family. Almost at the same time we have the Sutānukā inscription (*Devadinna's Jogimara Cave inscription*—3rd cent. B.C.) found in the east of India. The inscriptions belonging to the 3rd cent. B.C. are—*Mahāsthān Stone Plaque Inscription* (North Bengal), *Sohagama Copper Plate Inscription* (Gorakhpur, Dt. U.P.), *Piprahwa Vase Inscription* (Basti, Dt. U.P.). Another very important inscriptional document is the *Hātigumphā Inscription of Khāravela* belonging to the 2nd cent. B.C. *Heliodora's Besnagar Pillar Inscription* (Bhilsa, M.P. 2nd cent. B.C.) also belongs to this period.

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Pali Literature

The Pali literature, where the teachings and doctrines of Lord Buddha are embalmed and treasured up, were finally codified under the Mauryan empire sometime in the first century B.C., and under the Singhalese King Vaṭṭagāmani, the Canons were committed to writing. But a hundred years after the death of Buddha, there was a second council at Vesali where some portions of Buddha's teachings were codified. According to the Chronicles of Ceylon, there was a third council at the time of the famous King Aśoka where a real canon of sacred texts was compiled. Two hundred thirtysix years after the death of Buddha, Tissa Moggaliputta convened an assembly of a thousand monks in the city of Pāṭaliputra to compile a canon of texts of the Theravāda. Tradition has said that Tissa also compiled the *Kathāvatthu* which was later on incorporated with the canon. What was the nature of that literature is not known to us, but from this council we can say that there was an attempt to codify the messages of Buddha in the form of a literary document during the Mauryan empire.

This, in short, is a survey of the available literary documents at the time of the Mauryan empire which covers nearly 150 years beginning from Candragupta the Maurya (326 B.C.) down to Bṛhadratha (183 B.C.), the last emperor of the Maurya Kingdom.

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SCRIPTS USED BY AŚOKA

SAIKAT BANDYOPADHYAY

Maurya emperor *Devānāṁpriya Priyadarśī* Aśoka utilized four scripts to engrave his edicts. These are the Brāhmī, Kharoṣṭhi, Aramaic and Greek. Two of them are foreign and rest two are Indian. The Greek and Aramaic scripts are foreign scripts but they were popular in certain regions of his empire. Kharoṣṭhi, though originated from a foreign script, was popular and an accepted script in the north western provinces of the Mauryan empire. Brāhmī script purely of Indian origin was the most popular and widely circulated script during the period of the Mauryas.

Six Aśokan inscriptions so far discovered till date from some located areas in Afghanistan and Pakistan which are engraved in Aramic language and script. These are (1) Laghman Aramaic Edict No. 1, (2) Laghman Aramaic Edict No. 2., (3) Taxila Aramaic Edict, (4) Pul-i-Darunta Aramaic inscription, (5) Shar-i-Kuna Aramaic inscription and (6) Kandahar Aramaic Edict.

In 1914-15 an octagonal pillar of white marble was found, built into a wall between two Chambers of a building of Block-F at Sirka, at Taxila in Pakistan. An inscription in Aramaic is engraved on that pillar.[1] A, Cowley and L.D. Barnett, who were among the first writers on the Taxila, inscription, attributed it to *c.* 4th century B.C. and did not find any reference to Aśoka.[2] E. Herzfeld[3] was the first scholar to notice the words *marana Priydar* in line 9 and the words *li-marana Priyadarś* in line 12 and he considered these expressions as referring to Lord *Priyadarśī* i.e. Aśoka. Therefore he took the inscription as that of Aśoka, F.C. Andress[4] who also noticed the references to *mrn Prydrs* thought that the inscription was insued by Aśoka when he was the Governor of Taxila.

A few years before 1932 a broken stone tablet with engraved inscription in Aramaic language and script was procured in the neighbourhood of Pul-i-Darunta in the Laghman or Lamghan area of Eastern Afghanistan and later transferred to the Kabul Museum.[5] Prof. Morgenstierene[6] made the discovery known to the academic circle of Europe. The inscription bears eight lines engraved in the Aramaic script. H. Birkeland[7] who first edited the epigraph dated the inscription to the late Achaemenid period. F. Altheim[8] attributed it to Aśoka. W.B. Henning[9] who confirmed this attribution made great improvement in the reading and interpretation of the text.

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Shar-i-Kuna bilingual (aramaic and Greek) Edict was discovered in 1957 at a place situated a few miles west of present Kandahar in South Eastern Afghanistan which is engraved on a block of rock being the part of a mountain in the vicinity of Shar-i-Kuna.[10] The Aramaic part of this epigraph is separated from the Greek record by an interlinear space of 2 cm. It consists of eight lines and the letters, elegantly cut are noticeably smaller than the Greek characters. Palaeographically the epigraph can be compared with the other Aramaic inscriptions of Aśoka.[11]

Kandahar Aramaic Inscription is engraved on a block of limestone procured from the bazar of Kandahar, but believed to have been discovered in the ruins of the old city of Kandahar (Shar-i-Kuna) and it might have been originally installed in or near the locality.[12] D. Schlum Berger[13] was the first noted scholar to know of the existence of this epigraph before May, 1964.

In 1969 Mr. and Mrs. Jean Bourgeois of Belgium discovered an inscription on a vertical slab of stone near the top of a hill on the left or eastern bank of the Laghman river and near the modern track which goes up the Laghman valley upto about the confluence of the rivers Alisang and Alingar and ultimately reaches Metaghlam, the head quarter of the province of Laghman. The ridge called Sultan Baba is also not far from Qarghai and Shalatak.[14]

Not far from this site in the valley of Laghman and on the left bank of the Laghman river there is another cliff called locally as Sam-Baba. The distance between the Sam Baba and Sultan baba is about two kilometers. On Sam Baba appears another Aramaic inscription which is known to have been discovered by G.D. Davary in 1973.[15] The Laghman inscription No. 1 discovered in 1969 consists of six lines and the second one discovered in 1973 bears ten lines in Aramaic characters.

Two inscriptions in Greek language and script are so far known which were engraved by Aśoka. About the Shar-i-Kuna bilingual edict as told before, the Greek record is engraved in fourteen lines of uneven length. Palaeographically the Greek letters used here can be dated to *c.* 3rd century B.C. The letters which vary in height from 0.7 cm to 2 cm are on the whole well engraved.[16]

In November 1963, Dr. D.W. Seyring noticed a Greek inscription on a rectangular block of porous limestone lying in front of a shrine at old Kandahar. It was originally somewhere in the ruins of old Kandahar. The inscribed stone was later presented to Afghan National Museum, Kabul.[17] The block of stone is 45 cm. high, 69.5 cm. wide and 12.13 cm. thick and bears at present twenty two lines of writing in correct and fluent Greek. Palaeographically the script may be placed to 3rd century B.C.[18]

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Different forms of Aramaic letters appear in different Aramaic records of Aśoka. The forms of a few of them have sometimes remarkable similarity with one another.[19] G. Garbini[20] pointed out *beth* in Pul-i-Darunta record bears a more archaic form than the same letter in other records. *Pe* has an acute angle in its upper part in the Pul-i-Darunta edict and occasionally also in the Taxila, Shar-i-kuna, Kandahar and first Laghman inscriptions.[21] The style of engraving the Aramaic letters is not always the same in Aśokan edicts. The script of the Pul-i-Darunta inscription is formal and the treatment of the letters is neat and angular in the Taxila record. The Shar-i-Kuna characters are fairly neat, but some of the forms are cursively engraved. The letters are hastily and carelessly incised and written in a little cursive style in the Kandahar epigraph.[22] In the first Laghman record the lines are not straight and the engraver was not careful in following the text. Lines 2 and 4 were added after engraving lines 1, 3, 4 and 6.[23] The forms of the letters are, however, often bold and clear[24] Palaeographically, the second Laghman edict has resemblance to the first one. However, here the numeral for hundred is little different from that of the first. Moreover, some of the letters are not well engraved in the second Laghman record.[25]

Inspite of these differences in forms of letters and style of writing, there is no doubt that the contents and broadly the palaeographic features date the records to the period of Aśoka, *i.e.* 3rd century B.C. Local differences in style of writing and forms of letters may suggest that the script was fairly well used in the areas of the provenances of the records in question, particularly in the territories now including the Kandahar region and Laghman Valley of Afghanistan.[26] The Aśokan Aramaic script evolved out of the standard Aramaic writing of the Persian period.[27] The Aśokan Aramaic script exhibits according to a considered opinion was "The first step towards an eastern development of the Aramaic script.[28]" Aramaic could have reached the Indian borderlands in the north west even in a pre-Achaemenid age through traders and also in the wake of the alleged Assyrian invasion of Bactria.[29] The Aramaic language and script were commonly employed in Assyria from the end of the eighth century B.C. onwards.[30]

Aramaic inscriptions of Aśoka found at Taxila, Pal-i-Darunta, Shar-i-Kuna, Kandahar and Laghman indicate the popularity of the language and the script in the north western section of his empire. The Shar-i-Kuna and Kandahar Greek edicts indicate the presence of the population of Greek origin in that region which was in Arachosia of Classical sources and the *Yona* province of Aśoka as recorded in his inscriptions.[31] The north western section of his empire was probably inhabited by people of diverse ethnic groups including Greeks, Iranians as well Indians.[32]

The earliest inscriptions in Kharoṣṭhī are those found in the Aśokan edicts at Manshera in Hazara district and Shahbazgashi in Peshawar district of Pakistan during the 3rd century B.C. and the latest are those known in the inscriptions of the Later Kuṣāṇas (third to fourth

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century A.D.). A few private records might have been written slightly later, but already Brāhmī was adopted by the Indianized rulers in the north western region. In Chinese Turkestan Kharoṣṭhī was preserved by the local people for some time more. But in India when the Hunas appeared in the fifth century A.D. Kharoṣṭhi was totally abolished.[33]

Kharoṣṭhi the name as an early Indian script along with the Brāhmī for the first time was referred to in the 'Lalitavistara'[34] a Buddhist text of the 3rd century A.D. and later the references are made in the Chinese encyclopaedia Fan-Wan-Shu-Lin[35] compiled in 668 A.D. Of all the scripts in Ancient India this is the only script which stands alone, by virtue of the direction of its writing, which is from right to left instead of from left to right. The very fact that Kharoṣṭhī was written from right to left led to the easy recognition of its relationship with the Aramic script, which was the main branch of the North Semitic alphabet.[36] This relationship was further strengthened by the identity of the letters such as *na ba ra* and *va* and a close similarity of a few other features, the most important being the employment of one basic form for the initial vowels in Kharoṣṭhī as is also the case in Aramaic.[37] While Aramaic script was suited to the Aramic language it could hardly be used for writing language *i.e.*, Prakrit, without making necessary changes in the values of the letters to represent the local sounds.[38] Kharoṣṭhī follows the principles of Brāhmī as far as the language demands, Brāhmī gets three basic forms of vowels *a, i,* and *u,* Kharoṣṭhī has only one, the forms of the remaining vowels being obtained by the addition of diacritic strokes.[39] The debt of Kharoṣṭhī is not in borrowing letter signs wholesale for writing the local language, but in making them basis for the evolution of its own signs.[40]

The rules followed in question of origin of Kharoṣṭhī to that of Aramaic a foreign script for making it suitable for writing in current India language may be summed up followingly :– (a) the evolution of the basic form of the initial vowels, and from it other vowels with the addition of diacritic strokes ; (b) one diacritic mark for *dīrgha, guṇa* and *vṛiddhi* ; (c) seventeen letters based on Aramaic ; (d) six aspirates, *gha, chha, jha, dha, pha* and *bha* formed by the addition of a diacritic stroke (e) three letters *kha, śa,* and *tha* again based on Aramic ; (f) the four cerebral letters *ṭa, ṭha, ḍa* and *ḍha* based on the form of *tha* ; (g) two nasals, *ma* and *na* based on the Aramaic ; (h) the nasal *ña* based on the form of *ja* and *jha* ; and (i) *ṅa* suggested by the brāhmī form.[41]

In the rock edicts of Aśoka in Manshera and Shahbazgarhi the Kharoṣṭhī characters are found predominatly roundish in their letter forms, though angularity by no means absent. It is possible that emphasis on angularity in some letters is due to the nature of the engraver's technique.[42]

Kharoṣṭhī maintains an unified character. Hardly any evolution is seen in the forms of letters. The main variation is in the manner in which a given form is reproduced in a material, the change in the letter effecting the forms. The particular manner followed

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in a period or on a material became a convention. This convention did not indulge into different schools of writing as it was controlled by a common technical process. The invention of diacritic strokes for new sounds is the most important in Kharoṣṭhī. As this script has been used to express sounds, needed in different languages, it was necessary to devise ways by which a given alphabet might be adopted to the particular need. Despite these additional strokes the main forms of the nucleus letters hardly show any evolution.[43]

The static and non evolutionary character of this script was due to its writing technology. So far as technique is concerned the Kharoṣṭhī as remarked by A.H. Dani[44] is a pen style of writing, in which one type of pen remained unaltered throughout. In the Aśokan inscriptions it leaves behind foot-mark in the form of an upward slant at the lower end of the vertical on the left. This foot-mark must be attributed to the style of the writer than to the engraver, as is proved by its presence in the hand written documents from chinese Turkestan. When it is not found in stone or metal, it is partly due to the engraver's neglegence.[45]

Barring the question of two foreign scripts (Aramaic and Greek) the introduction of Kharoṣṭhī and Brāhmī as the scripts for his edicts in general by Aśoka was done only to build up National or rather to say Imperial in his vast empire. Kharoṣṭhī the Indian script, though rested on foreign origin, was a popular script among the Indians in the north western areas and the rest of the vast territory of India found a suitable media in Brāhmī as the communicative force among the lettered multitude. Thus Aśoka selected a standard form of Brāhmī which had been in the knowledge of the people of his time and prescribed the script perhaps with certain modifications suitable to his edicts.

The inscriptions of Aśoka in Brāhmī had a unity of purpose and singularity of inspiration, consequently establishing a standard from of the script through out his vast empire.

The geographical distribution of his edicts in Brāhmī may be described as follows :- His major rock edicts in this script are found from Sopara in Thane district of Maheshtra, Girnar in the Junagarh district of Gujarat, Kalsi near Dehrabun in Uttar Pradesh, Dhauli and Jaugada respectively in Bhuvaneswar and Ganjam district of Orissa, Erragudi in the Kurnool district of Andhra pradesh and Sannati in Gulbarga district of Karantaka. Minor rock edicts were available as, such, Rupnath edict in Jabalpur district, M.P., Sasaram edicts in Bhojpur district of Bihar, Ahraura edict in the Mirzapur district, U.P., Delhi (Bahapur village), Panguraria in Sheore district, M.P., Gujarra edict in the Datia district, M.P., Erragudi edict in Kurnool district of Andhra Pradesh, Jatinga Rameshwar, Rajula Mandagiri, Gavinath, Palikigunda, Maski, Brahmagiri, Nittur, Siddapur and Udegalam in the Raichar, Bellary districts and nearby areas of Karnataka and Bairat and Bhabru edicts in Jaipur district of Rajasthan. His major pillar edicts are found from Topera now transferred to Firuz-Shah-

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Kotla in Delhi, meerut which is also transferred to Delhi, Lauriya Arayaj, Lauriya Nandagarh and Rampurva in the Champaran district of Bihar. His minor pillar edicts are found from Sanchi, M.P. Saranath U.P., Lumbini and Nigali Sagar in Nepal, Amaravati in Guntar district of A.P. and Kausambi in Allahabad. The cave inscription in the Brāhmī script of Aśoka are found in the Barabar hill caves near Gaya, Bihar.[46]

The origin of the Brāhmī script in India is still a debatable question since 19th century. Earlier scholars are of the opinion that the script was evolved out of any foreign alphabet. James Prinsep[47] Otfried Miler[48] and Wilsom[49] were of the opinion that the Brāhmī script originated from the Greek alphabet. The theory of semitic origin of Brāhmī was first suggested by William Jones,[50] Weber[51] and Bühler[52] were among the supporters of Phoenician origin. Isaac Tayylor[53], Deecke[54] and Canon[55] suggested that the script took its origin from the Southern Semitic characters. Among other supporters of South semitic origin we find Edward clad[56] and Francois Lenormont.[57] The greatest champion of North Semitic origin of the Brāhmī was George Bühler,[58] who maintained the idea that twenty two letters of the Brāhmī alphabet had been derived from the North Semitic or Aramaic script, some of them from the early phoenicians, a few from Mesas stone inscription and five from the scripts of the weights from Assyria.[59] A.A. macdonell[60], L.D. Barnett[61] and David Diringer[62] supported Bühlers view.

Before the discovery of the Indus Valley civilisation some scholars of the 19th century believed that the Brāhmī was purely a script of Indian origin. Among them the notables were Edward Thomas,[63] Alexander Cunningham[64], Dowson[65], Chirstian Lassen[66] and G.H. Ojha.[67] Very recently a theory has been given by some scholars to the effect that Aśoka himself was responsible for creating an easy form of writing letters *i.e.* Brāhmī to propagate his *Dharma* in a popular and spoken language, *i.e.,* Prākrit. Among the supporters of this theory mention may be made of Sudhangsu Kumar Ray,[68] Thakur Prasad Verma,[69] S. Sankarnanayanan[70] and K.V. Soundararajan,[71] Ajay Mitra Shastri, M.C. Joshi and K.S. Ramachandran have refuted such view.[72] The most convincing view with regard to the origin theory will be that the script was the product of Indus Valley script through evolutionary process. Among the scholars prominent are Langdon[73], Hunter[74], Rajbali Pandey[75], Prof. Suniti Kumar Chatterjee,[76] Prof. D.C. Sircar[77] and S.R. Rao.[78]

In conclusion to his assessment, regarding the Indus Script S.R. Rao[79] says that the early syllabie-cum-alphabetic writing of the Indus people was transformed into an alphabetic system by 1500 B.C. They spoke an Indo-European language which shows close affinity to Indo-Aryan vocabulary, semanties and phonology. An attempt for the decipherment of the Indus script by him in his recent publication *'The Decipherment of the Indus Script* Bombay, 1982, establishes the fact that the authors of the Indus Valley Civilisation, spoke a language which may be termed as Proto-Vedic. Survival of the late Harappan script can

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be traced upto 1300 B.C. in Rangpur[80] 1200 B.C. at Machiala Mota[81] in Gujarat. In the Ganga Yamuna Doab, the evidence is provided by the graffiti on the pottery from Lal-Qila[82] and Alamgirpur[83]. In Central India stray late Harappan signs occur on the pottery from Eran,[84] further south in the Tapti and Godavari valleys Late Harappan signs are noticed on the lustrous Red Ware and Black and Red Ware at Theur[85] and Chandoli.[86] But more recently the basic Late Harapan signs are found painted on the Jorwe Pottery of Daimabad a Chalcolithic site in the Godavari valley of Maharashtra,[87] further south in Deccan and Tamilnadu we come across Red Wave sherds of the Megalithic period bearing graffiti marks.[88] Hence the graffiti on the Megalithic pottery which compare favourably with Late Harappan, signs can be said to indicate the continuity of writing even during 1000-300 B.C.

David Divinger[89] and I.J. Gelb[90] have made the remark that the course of the development of a script in a country will be such pictograph to ideograph, ideograph to syllable and syllable to alphabet. The discovery of Harappan writing of seals and its legacy on the graffiti marks on the potteries available in later periods as well as the early Brahmi script in Aśokan edicts and other inscriptions surely proves that the history of Indian writing might have gone through a course of evolution among the long range of pictographic, ideo graphic or logegraphic and syllabic stages and finally got the shape of an alphabet in a soil so highly developed in cultural atmosphere. There was obviously a missing link between alphabetic and complete alphabetic forms. The linear form of Late Harappan writing has twenty two basic signs and out of twenty two we can draw a close and graphical similarity with at least twelve forms to that of the Brāhmī letters of 3rd century B.C. Though we can not ascertain the phonetic resemblance between the Late Harappan signs and the Brāhmī script in this context, yet at the present situation we can conclude that the graphical similarity gives us an impression that the Indus script had been gradually stepping to the stage of alphabet, eliminating gross aspects of the earlier pictographic forms. The Brāhmī script, as usual, was evolved out of partly syllabic and partly alphabetic linear Late Harappan signs. This evolution of the script was a resultant effect of the rule of elimination and linearism. It was perhaps the necessity for the people living in the 3rd century B.C. or a few centuries before to write an alphabet with rapid hand and precessions. It was indeed an urgent need of that period ; as the change in the means of production resultantly brought about some radical shift in the social milieu of the country. The time saving economy in writing effected a change in physical appearance of the characters of Early Indus script and gave Brāhmī a new novel and simple form.

The inscriptions of Aśoka in Brāhmī are engraved on rocks, pillars, cave walls and stone slabs. The stone was selected as a suitable medium for it survives long—*Chira thitike siva* (MRF Rupnath, L.L.). The name of an engraver or scribe-cum-engraver as *Chapada*

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is found inscribed on the minor edicts of Brahmagiri, Siddapur and Jating Rameshwar. He signed his name in the Kharoṣṭhī script. He was, therefore, not a local man.

Aśokan Brahmī in its general appearance is straight and angular, though a few letters are round in shape. The height of the letters is usually equal and sometimes even in the conjuncts an equal height is maintained by making the second letter smaller in size. The lines of an inscription always goes from left to right except in Minor Rock Edict at Erragudi which is very muddled and where some lines run from right to left, owing to the engraver's inadvertence or discomfort in chiselling the letters in the said manner.[92]

C.S. Upasak[93] has discarded the view of regional varieties in the Aśokan Brāhmī as surmised earlier by George Bihler[94] and G.H. Ojha.[95] A.H. Dani,[96] Upasak[97] and T.P. Verma[98] are of the opinion that the surface of the material used for the inscriptions was perhaps one of the main factors for the changes in the forms of letters. The peculiarities in the forms of letters also can be attributed to the individual habits and mannerism of the writer and also to some extent of the engraver. In particular the changes in the forms and pattern of individual letters are due to two important factors-technical and psychological. The variations in different types of writing tools and the materials for inscriptions are the technical factors contributory to the variations of individual letters. Again in the psychological factors these variations were mainly dependent on personal mannerism, inadvertence, idiosyncracy and at the same time aesthetic sense of the individuals who wrote and engraved the edicts.

The Brāhmī script which was written from left to right direction for the first time appears in the edicts of Aśoka in its almost finished and perfect state. The Aśokan inscriptions in Brāhmī show that they were popular and known right from one end to other of this vast country. During the later centuries the regional scripts developed from it and underwent gradual evolution until the present age when modern Indian scripts of major Indian languages have attained their final shape and standardised by their individual press types. That is why the Brāhmī is called the mother of all the modern Indian scripts.

Emperor Aśoka selected the most popular spoken language Prakrit and the suitable script Brāhmī for engraving his most of the records as the official language and script respectively to ensure the National Integrity of the country during his time.

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ART ON PUNCH-MARKED COINS

CHHANDA MUKHERJEE

On the basis of the minting techniques ancient Indian Coins can broadly be divided into four classes *viz.* (i) Unsophisticated Die struck including punch marked (ii) East (iii) Die-Struck (iv) Repousse.

The punch marked coins so far known to us are made of silver copper and Billon. Devices on a large number of these coins do not cover the whole or most of the flan. Here the devices are impressed by separate punches with various dies 'applied irregularly at various points on the surface. This peculiarity led J. Princep to use the term punch marked' for describing this series of coins.[1] For manufacturing such pieces a prescribed amount of metal should have been melted in a crucible and the molten metal was left to be cooled as a lump or was cast into sheets of required thickness. In case of lamp it had to be beaten out into sheet. Strips cut out from sheets of this type, were divided into pieces of same weight and final adjustments were made by cutting small bits from one corner of heavier pieces, where such trimming was not necessary the pieces cut out from the sheets could be roughly of the required size (square, squarish, rectangular, oblong, bar-shaped, round, nearly round, oval etc.) If the sheet was very thick, the rectangular of square pieces cut out of it look like ingots. These pieces of prescribed weight, technically known as blanks, were probably slightly heated and then impressed with devices from different dies punched on them on one or both of their two sides[2] (obverbe and reverse). By and large the manufacturing method does not appear to have been very sophisticated one.

The punch marked silver coins have been identified by scholars with the silver *Karshapanas, Dharanas* or *Puranas* of the Smrities and the *Arthaśāstra,* and Kahapana of Buddhist and Jain literature (32 ratis = 56.7 grains) and copper coin with Pana i.e. 80 ratti or 144 grains.[3]

There is little doubt that the innumerable symbols affixed on these coins were of those authorities : King or the guild and several other person conversant with the process of minting. These coins generally carry five symbols often with variation. The standard symbols are five at least on the obverse. The coins with such symbols are found through out the length and breadth of the Indian Subcontinent and roughly within the limits of the Mauryan Empire. Hence these are generally taken as product of the Maurya age.

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The wide distribution of these coins and the apparent sameness of their general features lead us to suggest that they were issued when the greater part of India was unified under one administration. It is quite a well known fact that this happened in early historical times during the rule of the Imperial Mauryas and most of these coins though uninscribed both silver and copper, have, therefore, been ascribed to the said period.

The present paper aims to examine the symbols of the so called Maurya coins from the point of view of their artistic excellence.

This has been pointed out earlier that innumerable symbols occur on these coins but notable amongst them are the solar symbol, the six armed symbol, tree in railing, elephant, bull, dog-seizing hare, rehinoceros, wolf, rabbit, peacock, peacock on hill, snake, frog, scorpion, fish in tank, steel yard, bow and arrow, wheel etc.

Kautilya who is believe to have played a vital role in Maurya administration briefly refers to the minting of coins. In his Arthasastra he speaks of the Lakshanadhyaksha (Superintendent or Master of the Mint) and the Rupadarsaka (Examiner of coins) but does not say a word about the devices or symbols of coins.[4] Evidently the former and the latter officers who respectively minted and examined coins of the period displaying symbols were thoroughly conversant with symbolism, but it is highly regrettable that there appears to be no extant account of them. Various scholars have put forward various interpretation of these symbols. W. Theobold who made the first critical study on this issue is of opininon that some of these symbols had saivite and Buddhistic bearings while others were planetary marks or related to nature worship.[5] D.B. Spooner was of opinion that the symbols were Buddhistic in nature. Mr. Durga Prasad by his extensive and critical studies has tried to establish the Prehistoric origin of many of these symbols by showing their striking resemblance with figures and Pictographs found on Indus Valley seals.

From a critical and careful study it appears that they mainly belong to the animal and plant world, or combination or symbols, the meaning of which is unintelligible.

However, they undoubtedly represent one of the early records of man's urge for self expression. The symbols were generally executed in linear forms and in relief on individual punches which were of some hard metal and were hammered into the blanks so that their impressions were sunk into the surface. Allan has very aptly observed "the symbols that make up the type are beautifully executed and neat pieces of minute engraving.[6] But though they are beautiful and their execution is masterly, we often encounter some difficulty in determining and tracing their actual forms. This is in many cases due to crude and areless stamping of the symbols on the coin-blank and impressing them partially off the flan or in a jumbled up manner one over the other due to lack of sufficient space.

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The animal world of the punch marked symbols consists of bull, lion, dog, cat, deer, rhinoceros, rabbit, frog, fish, turtle, scorpion and snake. Among the birds, peacock is very popular. Even in its tiny form it has been deleniated very neatly. Every limbs of it has been executed by the artist with superb mastery. Sometimes it is seen perched on a three peaked hill or chaitya.

The lion, horse, and elephant symbols appear to have acquired greater popularity in *c.* 3rd cent. B.C. as it is evidenced by the capitals of the Pillars of Asoka. Lion and horse both these two animals are majestic - their inner energy and vigour are well reflected by the artists not only on the contemporary sculptures but also on the contemporary coins. In the depiction of the hare one can discern a rythmic flow and sense of motion in its body contour. The deleniation of owl can also be seen on these coins. Among the reptiles the most conspicuous is the snake symbol, which is portrayed frequently on the coins. The realistic depiction of other aquatic animals, fish and frog also draws our attention.

The depiction of human figures on the coin flan is highly interesting. Their hands and legs are quite visible and proportionate though they are very tiny in stature. Again, the several varieties of solar symbol, three peaked hill, chaitya, tree in railing, wheel engraved on coin betray the great artistic sense of the mint masters of the remote past.

Auspicious symbols *viz.* Swastika, Nandipada, Taurine etc. occuring on the coins uphold religious sentiment of the contemporary age. They occur in association with other symbol of plant and animal world.

The geometrical patterns for coin symbol have also been used by the mint master. These symbols include circles in different forms and combination, squares, triangles and hexagrams. The most interesting examples of coins bearing such symbols are the coins of Chaman Hujuri hoard, showing richest variety of such geometrical patterns as symbols and their depictional arrangement on such a tiny coin flan testifies the artistic acumen of the mint artists.

The occurrence of punchmarked coin symbols on other contemporary archaeological and historical material is still a matter of investigation among the scholars. Pre-Mauryan coin symbols have not been found on other objects, but symbols introduced on Mauryan coinage occur quite frequently, for example, the 'standard' symbol (ϒ) occurs on a bull head in Allahabad Museum, and on a disc from Pataliputra. The crescent on three-peaked hill (⛰) occurs on several objects including the Asokan edict from Rampurwa. On a copper bolt of Rampurwa Lion capital now housed in Indian Museum an hollow-cross, a three-peaked hill with crescent, a taurine and a conch like symbol are seen. But from the co-relation of punchmarked symbols with those on other objects though no difinite information can be gathered, a speculation may be made that three peaked hill with crescent

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above hollow cross or Swastika, taurine, standard and a conch like symbol were quite well known and therefore, they occur on different art objects of the Mauryan period other than coin. The other side of the picture is this, the punch marked coins which are not inscribed but assigned to the Mauryan rulers is hereby confirmed by the supporting evidence that the Mauryans issued punch marked coins. By and large the symbols appear on punchmarked coins are found on various objects since pre-historic times all over the world. Theobold, Coomera-swamy and Zimmer have traced the influence of Mesopotamian art on many symbols found on early Indian coins. Since most of the ancient human cultures evolved in centres like Egypt, Mesopotamia, Iran, and the Indus Valley, it is not surprising to find that these symbols were a common heritage.[7]

Coins of this type have been represented also in the sculptural art. They are represented in the panels at Bharhut and Sanchi narrating the famous Buddhist episode of purchasing Jetavana. The Kalpa briksha (wishful-filling tree) of 2nd cent. B.C. from Besnagar now housed in the Indian Museum, calcutta also shows some bags surrounding the lower part of the tree. These bags are in all likelihood full of punchmarked coins because some square punchmarked coins are seen falling from them.

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IDEALS OF SCULPTURAL ART AND ARCHITECTURE OF THE MAURYAN AGE

R. C. SHARMA

Indian art takes a distinct turn from the Mauryan age. Definitely a new chapter begins and a landmark is established. The most striking feature remains the use of stone for the purpose of art creation and to some extent for architecture as well. The country is full of hills and mountains and some of these like the Himālayas are held in high esteem, even then the stone was commissioned for artistic use at a very late stage. The reasons are open to guess. The mountains were regarded as bodies of gods and it was not considered a pious act to disturb or mutilate them by chiselling or quarrying.

Only for burial purpose a class of people used stone slabs, a practice which suggests a sense of divinity with this material and since it was considered fit only for the inauspicious and sad occasions, its general use remained interdicted. Thirdly, the technology was not so developed as to extract stone blocks for art and masonry work. The stone tools in the pre-historic period were made through scrabbling of stone pieces only. The ice was broken by the Mauryan kings and particularly by Aśoka, the Great who showed courage to discard a number of old traditions[1] as his edicts speak. Such a bold step could not be taken by an ordinary chief or king. It did require the royal will[2], a firm determination and preparation for counteracting the reactions which must have been voiced directly or indirectly. Thus the use of a new medium which was hard and non-perishable in nature reflects a firm administrative policy.

Was it necessary to take such a bold decision? The answer would not emit from the people at large, or from the highly placed administrators or even from the council of ministers of the Mauryan court but from the Emperor himself. He aspired to be remembered for long for his valour and deeds of public welfare. The annals of history do furnish references when the kings longed not only to be addressed and recorded in high sounding epithets and praise but sometimes they even tried to deify themselves. The Kushāna dynasty[3] is one of such citations and the kings adopted more than one devices to project themselves as superhuman. Mauryan kings including Aśoka were not exception of this maxim. The use of stone for recording the royal will and achievements ensured the lasting glory to

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the king and this was well achieved. This does not mean that he was not spreading the message of piety and charity among his subjects but his personal ambition to become immortal cannot be overlooked.

The change from age old timber and forestry tradition to a new medium of stone was not an easy task. The people were accustomed to a different form and texture, similarly the artists and craftsmen were also attuned to a different type of job and one can easily feel their sentimental attachment to their profession, inherited from generations or time immemorial. Under such circumstances only a few must have adjusted with the new formula and they were right to ignore the whim of an autocrat and kept themselves engaged in their brick and wooden pattern. The hypothesis is supported by the fact that the habitational layers of any Mauryan period peoples' dwelling site hardly reveals any artistic or architectural specimen in stone. Despite a resentment from public and artisans the Emperor remained unshaken and went ahead to get his own fanciful idea and ideals translated into action. He must have given impetus and big incentives to the artists who opted for stone and in doing so the royal command was to find the stone carvers whether Indian or foreigner. This fact is evidenced in somewhat mixed form of products bearing a multinational imprint. But one has to accept that in introducing the use of stone to convey his message the king himself stood like a rock unmindful of any criticism or protest, be it religious or social. To meet this end he made available all state resources to planners and carvers.

Our conjecture finds support from the archaeological discovery at Chunar, reported by Prof. B.N. Mukherjee, Prof. P.C. pant, Dr. Vidual Jaiswal and Dr. T.P. Verma and interpreted in their own way. Chunar was not only the main quarry for extraction of stone but it was also the workshop for manufacturing the stone pillars[4]. Some large blocks of stone bear Kharoshṭhī inscriptions although it remains a debatable point whether these inscriptions belong to one period or different periods. But an undisputed fact emerges that a group of foreign artists or quarry workers was residing in the region in the preand post-Christian era. It would not be inappropriate to opine that they were initially commissioned by Aśoka for executing pillars of big dimensions and which were installed at different places. This extraordinary project continued for long and the foreign artists, well versed in working on stone must have resided at Chunar under royal patronage and continued to live there even after the collapse of the Mauryan dynasty. They must have been employed at other sites where stone was ultimately accepted to be the medium of art and architecture. We therefore notice alien features percolating in the later monuments like Bharhut[5].

Aśoka created wonder by erecting monumental pillars with majestic capitals. Such an experiment was never made before in the history of the country. These display a remarkable aesthetic achievement and great technological and engineering skill used in their

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safe transportation and installation at places sometimes in the hilly regions as well. By doing so the Emperor probably wanted to show to the people of India and the neighbouring countries that the country was no more a tribal or rural entity but it was a mighty empire capable of accomplishing all those important and herculian tasks which were performed in other great empires[6]. It was a highly civilised state following an advanced urban pattern[7]. At the same time by installing these lofty columns with vigorous animals and roaring lions the Emperor seems to have been inclined to generate a feeling of uniqueness and to overawe the people. This was the usual practice of a great king who wanted to impress his subject with the pomp and power and also to create the fear of the authority of the state.

The perusal of the Aśokan inscriptions reveals the following facts[8]. :

(a) The administration was highly centralised.

(b) The King was a benevolent autocrat and conscious of his power and glory.

(c) The policy of Dhammavijaya was not as simple as it sometimes appears. It pronounced a code of conduct which had some universal appeal.

(d) This conduct and other moral teachings were backed by legal and administrative force for implementation.

(e) Certain social practices were disfavoured.

One of the main functions of the art of the age was to propogate the above ideals not only through request and appeal but also by using the royal authority if the occasion so demanded. These edicts, whether on pillars or rocks bespeak of high perfection achieved in calligraphy. Every letter is nicely, sharply and boldly incised and on the whole the entire epigraph looks like a fine specimen of the art of writing. This was an era when writing was not favoured and people respected the oral tradition. To make use of an unpopular medium of expression and that too with great command and perfection where a flaw remains a rarity, suggests king's determination to introduce a novelty. Certainly, this accuracy and fineness must have been the outcome of the master calligraphists and supervision of their work by the state officials who were as alert as the engravers themselves. Thorough and vigorous training to the young calligraphist cannot be ruled out.

The tall and heavy columns stand of their own. These did not require a platform or any additional support. The dimensions and weight of the piece were so well calculated that these were fixed in the earth with some stone pieces and remained stable on their position facing all climatic hazards. Their unique way of installation and their sudden dominant position in the topography of a region indicates the will power of the Emperor and capability of getting the miraculous things done even without public support.

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It is thus clear that the specimens of the Mauryan art particularly the products of the court patronage including the well chiselled inscriptions proclaim the intentions of the King to popularise and immortalise himself. The introduction of new code of conduct aiming at eradication of some wrong social practices also leads us in the same direction. Welfare of people was certainly the coveted goal but the extent of their wilful involvement was not considered. Display of the authority of the state and its capability to handle and achieve perfection also seem the functions of the Mauryan court art.

From where did these ideals evolve? What was the source of their inspiration? Was this practice indigenous or alien? These are some of the issues which require a proper assessment. The background and the then prevailing national and international circumstances suggest that the Mauryan court represented a happy blend of Indian, Iranian and Greek conventions. The authority of King in India was gradually increasing with concept of Chakravartin, or Sārvabhauma or Ekarāṭa *i.e.*, a paramount king. This is to be traced ṛight from the Vedic Saṁhitās where the king is supposed to perform the Rājasūya Yajña to become the king of kings. Later the Buddhist and Jain literature conveys the same message. Divinity was also associated with such kings and they were considered superior to all. The concept was not different than the Hellenistic and the Achamenian way of thinking when Darius calls himself *Kshayathiyaanām Kshayathiya,* the king of kings, the great king[9]. The words *dipi* and *lipi* denoting inscriptions are met with in the documents of both the Emperors. Similarly, the expression in third person as *Devānām piya Piyadasi evamāha* by Ashoka and *Thatey Darayavaush Kshayathiya* (Thus saith the king Darius) are very close. This should, however, be made clear that the early Indian texts do occasionally possess the third person expression but the inscriptional evidence cannot be overlooked[10].

It is a well known fact that the Mauryan kings from the beginning of the dynastic rule remained close to Greek and Iranian traditions. Chandragupta's matrimonial alliance opened a new chapter in the friendly relations. Contacts through exchange of envoys to the court became a regular feature. Bindusāra asks Autiochas son of Selukus to arrange to send dried figs, wine and even a philosopher. While the first two requests were granted the last one was declined on the ground that the Greek traditions were against selling a scholar[11]. Dion Chrysostom records that the poetry of Homer was translated into Indian language and was sung[12].

On the other hand, Aśoka contacted the kings and people of several West Asian countries in connection with his Dhammavijaya. The XIIIth Rock Edict (c. 256 B.C.) mentions such missions to the capitals of Autiochus (Atiyoka) II of Syria, Ptolamy (Turamaya) of Egypt, Antigonus (Antakini) of Macedonia, Alexander (Alika sundara) of Epirus (an ancient district of northern Greece) and Magas of Cyrenia in North Africa[13].

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Thus the cultural ties of the Mauryan court with the Hellenistic world were very strong and the alien glamour was much liked. The contacts with Iran were still stronger and earlier but its sovereignty was already overrun and shattered by Alexander in 330 B.C. even before the advent of the Mauryan power. The immediate impact at that time was that of Macedonian fashions both in Iran and India. But since the short lived victory of Alexander just over the North-Western provinces did not leave any permanent imprint on the art and architecture of the country the only attention was to be conversant with the glorious traditions of Iran established under the great king Darius through his majestic buildings. The inspiration from Iran was a natural phenomenon as both India and Iran belonged to the Common Orient or Ancient art and exchange at different levels continued for long and it had not been the one way traffic.

Despite some technical and anatomical details and a few motifs the concept of Mauryan art remained indigenous. There are several basic differences between the Achamenian and Mauryan pillars and the function also varies[14]. The symbolical significance of animals depicted either on abacus or top can be understood well only in the Indian context. The bell shaped capital has been explained as representation of full vase[15], and the lustrous polish is amply described in the Yudhishṭhira Sabhā of Mahābhārata (Sabhāparva). This should also be pointed out that the installation of pillar is an age old tradition. Indrakīla or Yajñayūpa set up during or after the completion of a sacrifice was a common site in early India. Of-course, these were generally made of wood. Scholars like John Irvin, S.P. Gupta and N.R. Ray think that some of the columns should belong to the pre-Aśokan period[16]. The lion pillar of Basrikha or Basarh in Bihar is a common citation. Even from the editcs of Aśoka an inference is made that he had used some earlier pillars and rocks for recording his inscriptions[17].

The columns were not erected and installed simultaneously and it must be possible to frame a satisfactory chronological sequence on the inscriptional and stylistic grounds. If Basrikha is pre-Aśokan, Rumindei was put up in the 20th regnal year and Rampurwa lion and Lauria Nandangarh were installed in the 26th and 27th year, respectively. Although no year is given in the famous Sarnath Lion Pillar, it must have been the last product. Others may be fitted in between. It appears that improvement was marked as the years rolled on. Balance, harmony and integration of shaft, abacus and crowning animals remained the main problem before the Mauryan court artist and it was finally met with success in the Sarnath pillar. But overdozing of some foreign traits like conspicuous veins and nerves do not seem to serve any purpose. Does this monumental piece of art reflect the state of mind of the Emperor feeling tension towards the closing years of his reign? We are informed through inscriptional evidence that everything was not well on the frontiers and he had to issue warning to those who intended to disturb peace.

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THE ASOKAN SCULPTURE— A STYLISTIC RESUME

ASOK KUMAR BHATTACHARYA

The Mauryan stone sculpture is practically synonymous with Asokan sculpture, for no example of the art can be attributed to the periods of his predecessors without doubt. And all Asokan sculptures so far discoverd are invariably carved out of sand stones, and none of them is in bronze or any other material. The most representative of his art are the animal figures which, barring the Dhauli elephant, crown his famous pillars. Since the animal figures are conceived as an integral part of the over-all scheme of the pillars, it would be necessary to introduce the latter in brief.

An Asokan pillar has four distinct components, namely, (1) the shaft, always plain and smooth, circular in section and slightly tapering upwards, directly rising from the ground, and chiselled out of a single stone ; (2) the capital in the shape of a gently arched bell formed of lotus-petals ; (3) the abacus, square and plain in earlier specimens and circular and decorated in the later ones ; and (4) the crowning animal, seated or standing, carved invariably in the round, and constituting a single piece with the abacus. The height of the pillars vary from about 30 to 45 ft., and significantly they show on them highly lustrous glass like polish as one of their most characteristic straits.

Of the pillars those from Basarh-Bakhira, Lauriya-Nandangarh, Rampurwa, Sanchi and Sarnath bear lion forms, while that of Sankisa an elephant and another one from Rampurwa, a bull. Besides, there is an elephant at Dhauli half emerged from live rock, and a few fragmentary pieces which most probably once adorned some pillars. One of these fragmentary pieces represent quardripartite bulls, and another possibly the mythical form of Garuda. All the pillars were not produced at a time and therefore the crowning animal also are of different times. From a careful study of the columns in their entirety as well as in relation to each one's component parts, taking especially in consideration their relative ratios and quality of artistic finish, N.R. Ray[1] has suggested a chronology of the animal figures in the following order. The Basarh-Bakhira lion evidently marks one of the earliest stages with its clumsy and somewhat representation of the animal which is, again, placed on a abacus of square

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shape disturbing the contour of the pillar as a whole. The next definite stage is reached by the Dhauli elephant which, for its proximity to the Kalinga Edict, is datable to the twelfth or thirteenth year of Asoka's reign. To this stage Ray ascribes the elephant at Sankisa or Sankasya. The Rampurwa bull marks the next stage in the ascending order closely followed by the Lauriya-Nandangarh lion, while the Rampurwa lion leads us therefrom to the final stage represented by the quadripartite semi-lions of Sanchi and Sarnath. This sequence of stylistic development may at least be accepted in its broad outline, keeping options for shifting position of some of the animals in between the Rampurva bull and the Lauriya-Nandangarh lion, and again between the latter lion and the Sarnath quardipartite. There is a view in favour of placing the Basarh-Bakhira pillar to a date prior to Asoka. But there is no evidence to support the claim that any of his predessesors was motivated to take the stupendous trouble of erecting a pillar made of Chunar sand stone at a distant place like Vaishali. For Asoka, the zealous propagator of Buddhism, such an endeavour is part of his life mission.

In the development of Indian plastic art the Asokan sculpture is almost an enigma, because in conceptual largeness and executional virtuosity it has no antecedent in the Indian subcontinent. Majesty and monumentality of its examples, along with the excellence of their carving and meticulous finish, vouch for the art's greatness. Every great school of art entails a sound socio-economic foundation and strong spiritual and artistic inspiration. Since in this seminar competent scholars have been entrusted with the studies of social, economic, religious and other relevant aspects of the Mauryan period, including the iconographic features of the art of the period, I would concentrate here to identify the sources from which the Asokan sculpture, more specifically the animal figures, have drawn artistic inspirations.

In fact, because of the stylistic sophistication and technical maturity of the art, many attribute its authorship to foreign craftsmen. But this attribution itself no way solves the problem relating to the origins of the style. For still there is a confusion as regards the actual sources from which the Asokan art drew examples to formulate its own vocabulary, albeit in a broad generalization all agree that they came mostly from West Asia and Achaemenid tradition. The Achaemenid rulers were great builders and the cities of Susa, Ekbatana and Persepolis, that they founded in the sixth and fifth centuries B.C., were grand testimony of their imperial grandeur. There is no denying of the fact that the Mauryan empire was the 'successor-empire' of the Achaemenid empire destroyed by the conquest of Alexander. Mortimer Wheeler[2] believes that with the burning of Persepolis in 330 B.C. and simultaneous down fall of the Persian empire the craftsmen engaged by the Achaemenids

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for continuously about two hundred years became jobless, and they found their new patrons amongst the rising Mauryas. Without being too much specific on the issue this can at least be said that Wheeler's conclusion is founded on the over-all situation of the time and some reliable archaeological evidence including those unearthed by Waddell and Spooner at ancient Pataliputra. Referring to the columns of the hall discovered at Kumrahar Spooner[3] says, "themselves moreover showed a technique in their polished surface which is not only known to have been un-Indian, and outside the line of Indian architectural development, but which... is identical with Persepolitan workmanship". What is significant is that this technique of polishing disappears from Persia after the conquest of Alexander and makes its next appearance only on the Indian soil during the days of Asoka.[4] It is thus quite possible that following the highways that connected as a trade route West Asia with India through Begram (north of Kabul), Charsada (Pushkalawati on the Peswar plane) and the far-famed Taxila (in the Punjab) the journeymen carvers of the erstwhile Achaemenid empire migrated to India and reached the court of Asoka. Asoka, who was well aquainted with the Hellenistic culture since the days of his Viceroyalty at Taxila, readily employed them to give expression to his ideas of using the medium of plastic art for propagating the teachings of his *Dhamma.* It is however his genius that liberated the Persian pillars from their supporting role in the Achaemenid architecture and used them as individual monuments standing on open space. Erected mostly on important sites of Buddhist pilgrimage these pillars played the role of signs for the visiting votaries approaching from different directions. This role possibly explains the reason of converting single lions on the earlier pillars to quardipartite semi-lions facing cardinal directions. From stylistic point of view, too, this changeover meets the requirement of a sculpture in the round leaving behind the earlier concept of single point frontality. This modification also speaks highly of the genius of Asokan sculptors.

A column-capital, discovered as early as 1896 at Bulandibagh (Patna), is of immense significance in tracing the origins of Asokan art. This column-capital is clearly of a familiar Achaemenid pattern. According to Wheeler,[5] "It has the stepped impost, side-volutes and central palmettes of its Persian prototypes, and its design if not its execution is attributable to an early phase of transplanted Achaemenid craftsmanship". If this column-capital is compared with the column-capitals of the Winter Palace of Darius I at Susa, their similarity will be obvious, especially if the lotus motifs of the volutes of both the examples are taken into consideration. While the presence of a Achaemenid type of column-capital is indicative of Persian inspiration of the art of Asoka, its volutes, an undoubted Persian interpretation of the volutes of Ionic capitals lead us towards an ultimate greek source. Here it may be mentioned that the famous text[6] discovered among the ruins of Susa records the fact that

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stone-cutters who wrought the stone in the construction of Susa under Darius I were Ionians and Sardians. Hence it would not be hazardous to say that the technique of stone cutting that came to India during the Maurya period was actually that of Ionia, which not only constructed Susa but also Persepolis and other Achaemenid cities. In these cities Ionian capitals in their wrongly interpreted manner were profusely used.

The lions of Asokan pillar-capitals are usually ascribed to the tradition of Hellenistic realism for the treatment of muscles and veins in meticulous care and their over-all anatomical proportions. Here again a reference to the Lions' Frieze in the Palace of 'The Kings of King' at Susa, now in the collection of Louvre, may throw some new light.[7] Once adorning the walls of the Winter Palace of Darius this frieze is a remarkable example of Elamite art of enamelling tiles. It shows a laterally moving row of lions with conventionally treated manes, muscles and veins of each of them. The roaring faces of the lions even in their profiles remind us the similar faces of the Sarnath lion-quartet, and in their physical treatment too, they exhibit clear similarity. Besides, a squating bronze lion of the same period and also from Susa shows similar roaring face and stylized treatment.[8] Since the Susa-frieze and the bronze pre-date the Hellenistic experiences of the Greek art, the Asokan lion-type cannot be marked as belonging to the latter tradition. It may therefore be assumed that the Asokan art as represented by its columns and lion figures had as its basis the vast experiences of the Achaemenid art, which, in its turn, derived heavily from Greek art of the Indian school. This assumption does not however preclude us from appreciating the impact of the Hellenistic influences on it. The galloping horse carved in relief on the abacus of the Sarnath pillar and such motifs as palmettes, resettes and hone suckles, point to this influence. The discovery of some Kharosthi inscriptions recording payments to the stone-cutters engaged at quarries near Chunar,[9] though of some later date, are also indicative of the presence of West Asiatic craftsmen in the atelier of Asoka. But it seems that after acquiring technique of carving stone from them the Indian artists asserted themselves by portraying animal forms in their own kind of realism based on close nature study and idealization of figures. For the Asokan stone sculpture show two distinct styles, one representing the lions and the other the Rampurwa bull and the Dhauli elephant. While the first one is of Achaemenid derivation, the latter one in its newly emerging realism is typically Indian. In the subsequent development of Indian sculpture the latter trend has played a role more significant than that of the former.

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MAURYAN TERRACOTTAS—AN OVERVIEW

SAMIR KUMAR MUKHERJEE

INTRODUCTION

The art of terracottas that flourished during the reign of the Mauryan kings mark an important chapter in the annals of Indian art. The sculptural art in terracottas during this period presents two distinct art traditions. The first tradition that centres round Magadha, the capital of the Mauryan empire, produced a limited number of figurines showing alien influences. The other tradition is noticible in the rest of the country that continued to indulge in yielding traditional terracottas which are autochthonous in character.

The entire repertoire of sculptural art in terracottas recovered both by systematic and regular excavations as well as by chance finds are enough to prove the wide popularity of this art tradition in this period. The whole range of terracottas ascribable to this period may be classified into the following categories.

THE SURVIVING TYPES

A. Fashionable Ladies of Pataliputra

The most remarkable finds from Pataliputra and its neighbourhood constitute a distinct class by themselves. These were recovered at a considerable depth in the dark blue soil enveloping the ancient wooden rampart sometime at the beginning of this century. The figurines are hand modelled while the faces are from moulds, the so called 'Dancing figures' are characterised by simplicity, slenderness and sensuousness. The figurines in strict frontal pose are characterised by smiling countenances elaborate headdresses consisting of many parts. The position of the hands suggest a dancing attitude. The other female figurines are simpler, subtler and appear to be sensative, refined and graceful with a diaaphanous clothing clinging to the bodies. One of the figurines with fluttering skirt without folds and with a headdress like a piece of cloth with a rim against a high forehead deserves notice. These dancing girls and other graceful ladies of Pataliputra wearing simple ornaments present an urban sophistication. This group in particular in something new in the whole range of Indian

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terracottas and bear unmistakable foreign affinities, having Hellenistic faces and even Hellenistic drapery. The elongated physique and fluttering drapery appear to be common characteristic features of both Pataliputra and Tanagra (Greece) terracottas of the *c.* 4th-3rd centuries B.C. We should remember that the Mauryan monarchs maintained diplomatic and economic ties with West Asiatic and Hellenistic countries and this cultural contact is reflected in their artistic manifestations. There was an influx of foreigners in the capital city of Pataliputra, which necessiated as told by Megasthenes on the part of the municipal authorities to set up a special cell to look after them. These terracotta figurines were possibly the pride possessions of the royal class and affluent *Śreṣthin* (businessmen) community who dominated in the contemporary socio-economic life. As these terracotta figurines are larger in size and fragile, these could not have been preserved in ordinary houses of common men. In all probabilities, these were the produce of '*Rājakumbhkāras*' (Royal potters) of which Pāṇini speaks about. These potters only catered to the needs of the wealthy classes in the capital city.

Some doubts have been expressed by many scholars regarding the date of the Patna group of female figurines. Discovery of strikingly similar figurines from Sonepur (Dist. Gaya) in Period II and at Rajgir in Period IB in association with Northern Black Polished Ware (NBPW) has set at rest their dates to the Mauryan period.

B. Individualised Features

Individualised expression is represented by two youthful heads, one with bicornate headdress possibly a feminine figure and the other with a radiant expression as if smiling. The second one has been described by Coomarswamy as "one ot the most sensitive end skillful production of Indian art of any period".

Some more individualised character are evident at a few other heads from Golakhpur and Bhikna Phari (near Patna) on account of their volume and expression. Particular mention may be made of a seated Yogin from Bhikna Phari with glowing countenance even in austerity and refined modelling. The snakehood as a headgear lead Prof. S. K. Saraswati to associate the figure with Siva. The traces of pigment suggest that the figure was painted.

Another female figure in the round from Golakhpur represents an youthful woman with sensuous modelling. The slenderly built body with narrow waist, jewelled waist-girdle and tassels exhibit high skill and carftsmanship on the part of the modellers. Dr. Kramrisch on the basis of stylistic anology associated this figure to the family of Yakshini from Didargung. Prof. Saraswati prefers a date anterior to that of Didargang.

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C. Mothergoddess Figurines

Mothergoddess worship was widely practised during the period under review. This is evident not only from the recovery of innumerable mothergoddess figurines in definite archaeological contexts but also from stone discs symbolising the same belief. These discs are found in widespread areas from Chandraketugarh (W. Bengal) in the east to Taxila (Pakisthan) in the northwest. With the continuation of handmodelled "archaic" mothergoddess with bird like or animal like faces, pinched nose and crudely built body and mothergoddesses with punched or incised motifs, having sparse ornaments, we notice the gradual emergence of moulded forms with more sophistication in late NBPW level. The figurines belonging to the above types primarily hail from Ahichhatra (Dist. Bareily, U.P.) and other cognate sites of Upper and Middle Ganga valley. The principal sites include Ahichhatra (Dist. Bareily), Jakhera (Dist. Etah), Hastinapur (Dist. Meerut), Mason (Dist. Gazipur), Kausambi (Dist. Allahabad), Sravasti (Dist. Gonda and Baheirh), Rajghat (Dist. Varanashi), Taradih (Dist. Gaya), Balirajgarh (Dist. Darbhanga), Champa (Dist. Bhagalpur), Khokrakot (Dist. Rohtak), Sugh (Dist. Ambala) and others. It is to be noted that the NBPW is a common associated ceramics that determine their distinct period of occurances.

The famous site of Mathura, U. P. has yielded quite a distinct varieties in grey black clay, characterised by flat steatopygous figurines with prominent breasts, applique necklaces, head ornaments, heavy girdle, having punch stamp or incision mark with stumpy legs. Mathura excavation has revealed a gradual change from the archaic types to the moulded oval face type with rosettes and large round shaped earrings.

The Buxar figurines represent mainly fashionable ladies with elongated physiognomy and elaborate and gorgeous hairstyles in varieties. The elaborate foilage and floral designs in their headdresses and ornaments suggest their possible association with some kind of vegetation or agricultural rites. This reminds us of Pāṇini who refers to the *Śālabhañjikā* festival characteristic of the Eastern people. Although the female motifs referred to above does not belong strictly to the *Śālabhañjikā* concept, but positively the sylvan association suggests the possibility of these ladies being interpreted as '*Banadevīs*' (forest goddess) which were popular in the folk cultural level.

Some special characteristic features mark the mothergoddess figurines that have been excavated in large number from various sites in the Peshwar division of Pakisthan. Charsada (ancient *Puskalāvati*) yielded a good number of such figurines, termed as "Boroque Ladies" by Sir Mortimer Wheelar and dated between *c.* 3rd-2nd century B.C., Sir Wheelar's dating has been confirmed by subsequent excavation at Saikan Dheri by Prof. A. H. Dani, where

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these figurines have been found at the lowest level dated from the 3rd to the 2nd century B. C. Here the figurines are remarkably flat and stereotyped, having ornaments, slit-mouth, almond-shaped eyes and breasts done in applique, while some elements like cross-belts (*channaviras*) and waist belts are incised.

D. Naga Figurines

The practice of Naga worship that continued from the pre-Mauryan period persisted in this period and also in the succeeding Sunga period and later. Innumerable sites primarily in the Middle and the Lower Ganga Valley provide stratigraphic evidences of their occurances. The sites include Srirangaverpur (Dist. Allahabad), Vaisali (Dist. Vaisali), Chirand (Dist. Saran), Champa (Dist. Bhagalpur), Taradih (Dist. Gaya), Kolhua (Dist. Vaisali), Sravasti (Dist. Gonda & Baherich), Chandraketugarh (Dist. N. 24-Parganas) etc. etc. The cult of Naga appears to be of considerable significance in the prevailing environment and socio-religious conditions. Kautilya refers to the *nāga* worship on the new and full moon days as an auspicious rites to ward off their danger (Arthasastra IV 3).

E. Animal Figurines

A wide range of animal and bird figurines like bull both stamped and humpless variety, elephant, horse, buffalo, monkey, ram, crocodile, goat and even pig are found in red, grey colour and some having NBP slip and meticulously decorated. The decoration resembles to the prevailing applique technique and punch marked and incised circlets on figurines. The Mathura animal figurines bear similar rosette motifs on them as noticed on mothergoddess. Elephants from Hastinapura and rams from Vaisali bear vegetation motifs that remind us of Buxar female figurines. A careful observation of animal figures reveal that their number is fewer at the early NBPW phase whereas the number increases at the later NBPW phase. Many of these figures served as toys while majority might have been used as votive offerings or ritualistic items.

EPILOGUE

The study based primarily on stratigraphic contexts of the period offers adequate scope and opportunity to review the prevailing taste, faiths and beliefs of the people reflected through the medium of clay. There exists some problems towards formulating a comprehensive picture of this period on account of limited area excavations. Excepting a few sites like Ahichhatra, Kaushambi, Sonk (Mathura), which were excavated on a larger scale, most of the sites have been excavated by way of vertical diggings, with an aim to solve some specific

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problem, as such detail and exhaustive information are lacking. So we come to know only the summary and concise reports of the terracotta finds. On many occasions, both the Maurya and the Sunga periods are lumped together in a single period and as a matter of fact specific terracotta finds from each distinct period can not be separated distinctly. Inspite of several problems, a careful study of the finds from the period under review both from the earlier excavations and chance finds at Patna and its periphery and those recovered from stratified contexts in later excavations since mid-forties of this century present a meaningful picture before us. These may be summerised as follows.

(i) Therracotta figurines of secular nature primarily centre around Pataliputra and its neighbourhood, the heartland of Magadhan supermacy, whereas figurines symbolizing ritual characters are found widespread in janapadas, prosperous villages that became important in the contemporary socio-religious set up. Thus it appears that while the elites and affulent classes at the capital city commissioned special class of artists to produce sophisticated terracottas imitating the Hellenistic tradition, the country outside the capital city indulged in producing the traditionals terracottas some even having 'ageless' character for ritual and cult purposes. The terracottas with non-Indian character, in all probabilities, were the products of either of the foreign artists or artists trained under their supervision. That the Magadhan artistic and fashionable terracottas were of popular demand is attested by the fact that these have been either imitated or traded in widespread centres specially in important cities or religious centres like Lauriya-Nandangarh, Ganoria, Tilourakot, Mangolkot, Mahasthangarh, Pokharna (ancient Puskarana), Chandraketugarh to commensurate with the urban taste.

(ii) A study of the female figurines in the early NBPW level shows that there existed archaic female deities, sometimes with bird or animal like features not unlikely to have been manufactured as fertility cult. These are defined as "mother goddess" by scholars. This hand modelled 'archaic' and generalised form flourishing at the early NBPW level underwent gradual changes in the succeeding mid and late NBPW levels that ultimately lead to the emergence of sophisticated forms of mould made mothergoddess. It may so happen that these figurines served different functions in different periods. We come to know from *Atharvaveda* that the practice of making beautiful figurines dressed like birds were in use in special rites connected with *Krityas*. The images were placed on special grass or under the earth in cremation grounds. Many of these figurines with stumpy legs or without legs raise considerable doubts whether these were manufactured for such rites. These might also be related to the *tantric* rites of sorcery.

(iii) We notice the prevelance of aniconic belief and tradition from the pre-Mauryan period onwards. That existed at the very root of some artistic conceptions like that of

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representations of stylised snakehoods. This distinct form and some with different forms like serpent and female figurine combined together continued in the Mauryan period and even till *c* 1st-2nd centuries A. D. at some sites in Gangetic Valley that was covered with forest infested with snakes. This area due to growing impact of urbanization gradually became the epi-centre of civilization and culture.

(iv) The prevelance of the cult of Yaksa and Kuvera in the Mauryan period is attested by the discovery of images in stone during this period under discussion. The prevelence of this tradition is corroborated by a few similar figures in terracotta in the Mid and Late NBPW phases.

(v) Regional characters in the representation of mothergoddess types are noticible at some renowned city centres. This is best reflected from the special traits available particularly at Mathura, Buxar and Charsada. Mothergoddess at these centres may be the tutelory deities of the regions concerned. This reminds us of the tradition of existence of '*Pushkalavati nagara devata*' in Gandhara.

(vi) Distribution of certain distinct types at important Janapadas and at prosperous villages presupposes both wide range of popularity and cultural contacts between these places. It is well known fact that there existed growing commercial contacts and shared economy during the period under review.

To conclude the art of the baked earth is concerned primarily with earth, so were the people concerned with the fertility cult expressed through the medium of mothergoddess. So she was the focal theme of the art concerned.

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THE PICTORIAL PROGRAMME OF AŚOKA'S DHAMMA

D. C. BHATTACHARYYA

It is not easy to piece together the picture of the religious imagery prevailing during the period of Aśoka, the third ruler of the Mauryan dynasty. Contemporary archaeological evidence is not of substantive nature. Variable interpretations postulated by them act as a deterrant to the possible restoration of the antiquated picture. However, a few enlightening glimpses from Aśoka's epigraphs, and covert meassages contained in some of the lithic testimonies ascribed to this emperor, offer handy help in this regard. Of course, the recovery of the picture is possible to the extent of understanding of the devotional ethos and ritualistic convention of the concerned period. But the query regarding the formalized nature of religious images possibly floating around at that time cannot be straight away answered to in the absence of cogent evidence.

However, it is difficult to deny the fact that all visual forms—religious or otherwise—have their ancestry, and that each form is not only germane to a preceding one, but is destined for a prospective metamorphosis. In view of this, the enterior religious imagery envisaged by the Indus Valley ruins, and by the literary glimpses from the Vedic and early Buddhist texts, should be relevant to the period of Aśoka as well, with, of course, the admissable allowance of the anticipated transformation due to the changed time and circumstance. Similarly, one cannot rule out the possibility of the prevalence of some of the forms of religious imagery out of the ones existant during the post-Aśokan period, like, for instance, those found from the art of Bharhut, Sanchi, early Gandhara-Mathura, and those referred to in some early epigraphs and literary texts ascribable to periods closer to Aśoka's. But the reconstruction of the picture on such an oscilatory perspective cannot but be too simplistic and tentative to offer the needed frame of reference. We should rather explore other possibilities which are not only pertinent to the period of Aśoka, but which also reflect on the vision and approach of this ruler in respect of religion and its sacerdotal manifestations.

Aśoka's inscriptions containing the Imperial Promulgations with crypto-religious elements offer scanty but useful information. That Aśoka himself refers to his edicts as the *dhammalipi* is doubtless of much significance. Whatever may be the nature of Aśoka's

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dhamma in the index of the general notion of a religion, the *dhammalipis* betray the emperor's attempt to supersede the contemporary miscellany of religious beliefs and practices with a simplistic way of life based on time-tested and enduring values that he refers to in his Minor Rock Edict II as *porāṇa pakiti dighāvuse*. It is interesting to note that in the Rock Edict I he is critical of certain *samājas* or community festivities, but approves of some others of the type *(SANTI API EKATYA SAMĀJĀḤ SĀDHUMATĀḤ DEVĀNĀMPRIYASYA PRIYADARŚINAḤ)* without naming them. Similarly, in the Rock Edict IX he expresses his disfavour for the performance of certain conventional rites (maṅgalaṁ) which he labels as trite and useless *(kṣudraṁ ca nirarthakraṁ ca)*, in preference for *dharmamaṅgalaṁ ākālikaṁ* or ethical rites of timeless relevance. The selective approach of Aśoka towards a preferred alternative is a clear indication of the fact that the religious scene was not monochromatic at all.

The opinionated alternatives promulgated by Aśoka suggest that his so-called *dhamma* was a programmatic approach towards taking control of the palette of the—then religious diversity. Although Aśoka's *dhamma* has mostly been interpreted as something exclusively his own, and not affiliated to any of the institutionally organized religions, the Buddhist bias of the emperor and his *dhamma* being crypto-Buddhism can hardly be denied. A careful reading of the contents of his edicts leaves the impression that Aśoka perhaps surreptitiously endeavoured to bring the people under the so-called "Umbrella Culture" of Buddhism. It may not be just a mere coincidence that the basic precepts of the Buddha, like, for instance, universal benevolence *(Bahujana hitāya, bahujana sukhāya)*, non-injury to inimate beings, and tolerance towards others, are also the core of the ethics of Aśoka's *dhamma*.

However, to motivate the people in a particular orientation needs intent reading of the psyche of the populace. That Aśoka mastered this art quite well is evident from some of the pertinent conclusions that he made out of his analysis of the psycho-behavioural pattern of the people. It is significant that in Rock Edict VII he observes that although people vary in their elemental being *(uccāvacacchandaḥ)* and circumstantial upbringing *(uccāvacarāgaḥ)*, they either take, accordingly, a general view of things *(sarvaṁ vā)* or a selective approach *(ekadeśaṁ vā)* to them. Moreover, he was convinced that everything being not releant everywhere *(na ca sarvaṁ savatra ghaṭitaṁ)* or to every people, there was the need for abstraction or precision *(samkṣiptena)*, expansion or elaboration *(vistāreṇa)* and a balance *(madhyamena)* between these two extreme modes of communication, as Aśoka verily confides in the introductory section of the XIVth Rock Edict. This perhaps shows that not only for his Imperial Promulgations, but also in respect of the disseminating of his ethico-religious ideology, Aśoka was discreetly selective in choosing the appropriate means of communication.

Aśoka adopted three means of communication, namely, literary, oral, and visual. The Edicts *(dhammalipi)* inscribed on the rockes and pillars, and written in Prākṛit, Greek or

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Aramic, constituted the dispatches meant for the literate people. For the illiterates there was the provision for oral transmissions of the messages through the *Dharmamahāmātras,* as the Jaugaḍā separate Rock Edict clearly indicates : *samapāyaṁ mahāmātraḥ rājavācanikaṁ vyaktavyāni, ... iyaṁ ca lipiḥ anucaturmāsaṁ śrotavya tisyena.* The latter statement could be found also in the Dhauli version of the separate Rock Edict. Also, Aśoka wanted to impress the dilettanti with the visual ploy of the imposing pillars and the sculptural crowning pieces evoking imaginative response.

Aniconic symbolism is the most effective means of visual transmission of discreet didactism, as Aśokan edicts seem to have been. Keeping in view the hind and forward perspectives, it can in no way be presumed that iconic forms were not popular in the visual milieu during the Mauryan period. Numerous terracotta figurines claimed to be of the mother goddesses, and of the Yakṣas and Yakṣiṇīs, are ascribed by scholars to the Mauryan period, and their lithic parallels are also not few in number. A gold repousseé figure allegged to be that of the Earth Goddess, and claimed to belong to the Mauryan period, has been found from Lauriya Nandangarh. The period immediately succeeding that of the Mauryas is well represented with images of various deities, although the image of the Buddha does not seem to have made its explicit appearance before the beginning of the Christian era. It is interesting and significant that Aśoka did not adopt any of the flatting iconic motifs of his time to visually complement his covert religions message.

Various aniconic symbols bearing the potential of inter-faith mobility were readily available even during the time of Aśoka. Many of these symbols and motifs have the advantage of being deceptively secular. It was not unexpected for Aśoka to use such aniconic visual metaphors which were not likely to alienate him from those who did not subscribe to Buddhism. But, interestingly, Aśoka took care to select some such aniconic motifs which had already acquired specific meanings in the Buddhistic fraternity, but, at the same time, had not been disowned outside of it. Aśoka showed his usual prudence in choosing the appropriate visuals bearing these dimensions.

Aśoka's selection of the free-standing pillars as the receptacle of his edicts can hardly be a mere fortuity. The visual ploy of the pillar obviously was adopted by him in order to give a unifying sense of belonging to the populace, irrespective of any sectarian label, which had long accepted the pillar as the symbol of the "Axis-Mundi" of the universe. Such an emblematic notion of the pillar can be traced back to the Vedic period, if not to the more remote antiquity. At the same time, the verticality of the pillar as an analogy for the soaring and firm personality of the Buddha has been repeatedly mentioned in early Buddhist texts. It is not unlikely that Aśokan pillars were meant to be the visual equivalents also of the *Saṁgha,* the Institution of Buddhism which was the upholder of the Faith.

The last suggestion comes out of the interpretating reading of another aniconic imagery, namely, the Wheel or the *Cakra,* bearing some association with the pillar *vis-*

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a-vis the Buddhist Church or *Saṁgha.* Atop the Sarnath Lion Capital there existed a 32-spoked Wheel which doubtless was a symbol of Buddha's Turning of the Wheel of Law *(dharmacakrapravartana)* at Sarnath. It also symbolises the Buddha as the celebrated *Cakravartin* (Universal Monarch). Early Buddhist texts, however, speak of a 12-spoked *(dvādasāra)* Wheel that the Buddha is claimed to have actually "turned" as the physical act symbolising the notional movement of the Law to places. The incorporation of 32 spokes in the Wheel atop Sarnath Lion-Capital may not be an anomaly. The Wheel here seems to have been an aniconic representation of the Buddha as a *Cakravartin* bearing on the body *dvātriṁśat-mahāpuruṣalakṣaṇa* or 32 auspicious marks of the body of the Super Man. Since the iconic representation of the Buddha was not in vogue during Aśoka's time, the placement of a 32-spoked Wheel atop Sarnath Lion-Capital was indeed a unique ploy to indicate the presence of the Master with such an aniconic analogue.

D. R. Bhandarkar has made a detailed study of the proposition that Aśoka also styled himself to the ambition of a *Cakravartī* Monarch. It is not unlikely that the Wheel here at Sarnath Lion-Capital served as a visual equivogue to refer to the Master and the Emperor, both *Cakravartins* in their respective ways. However, one cannot be sure whether such a Wheel-symbol was used in the other Capitals of Aśokan Pillars as well. The Sarnath Capital bears four additional representations of the Wheel carved in relief between the animal motifs showing the elephant, lion, horse and the bull. The animal motifs and four Wheels, each having 24 spokes, are depicted on the face of the abacus of the Capital. The meaning of these four wheels perhaps lies elsewhere. It is significant that these wheels are of equal size and semblance, and each of them is shown between animal motifs bearing perhaps some symbolism of directional orientation to which we will refer below. It seems that the carved wheels were not intended merely to serve the artistic exigency of filling the inter-spaces, but, because of their proximity to the motifs bearing the directional orientation symbolism, they were indicative of the mobility and dissemination of the Law in all the four quarters.

Four animals, namely, the elephant, lion, bull and the horse, are only depicted in the Aśokan Pillars, either as the crowning pieces for the Capitals, or as carved motifs on the abacus, as in the Sarnath Pillar Capital. These animals have mostly been taken to symbolically refer to some aspects of episodes in the life of the Buddha, for example, the elephant symbolizing the Birth, the lion his Ancestry, the bull his Law, and the horse his Renunciation. Some postulate the view that the bull is indicative of the Birth-zodiac of the Buddha which was Taurus (*vṛisarāśi*). But the biographical interpretation is not absolutely free from doubts. The elephant, lion and the bull do not raise much question. But the horse shown in the abacus of the Sarnath Pillar is neither briddled nor saddled to warrant its equation with the concept of the Renunciation of the Buddha. Moreover, the sole Horse-Capital ascribed

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to the Rummindei Pillar by the Chinese pilgrim Hiuen Tsang being not traceable, it is not possible to check its Kaṇṭhaka-like features and attributes associated with the Great Departure of the Buddha.

The plausible interpretation of the four animals seems to be their notional association with the four quarters, for example, the lion with the north, the elephant of the east, the horse of the south and the bull of the west. Although the original placements of Aśokan Pillars do not go well with such orientation, it seems that long-established tradition of animal symbolism pertaining to these four particular animals for the directional quarters might have been at the root of their selection for the purpose. The *Arthaśāstra* of Kautilya also suggests that the four guardian deities of the four quarters should be represented in their respective appropriate directions. The four guardian deities of Buddhism are Vaiśravaṇa, Dhṛitarāṣṭra, Virūḍha, and Virūpākṣa, who are associated respectively with the lion, elephant, horse and the bull. Hiuen Tsang refers to the Anottata Lake, which bathed the newly born Buddha, to be composed of the water of four rivers arising out of the mouths of a crystal lion, silver ox, golden elephant, and a lapis lazuli horse, oriented at the north, east, south and the west respectively. The Four Directional deities *(Caturmahārājikas),* mentioned above, are intimately associated with Buddhistic lores. The four animals associated with these deities doubtless bear a cosmological symbolism as they appear atop Aśokan Pillars, particularly when they figure in the abacus of the Capital of the Sarnath Lion Pillar.

The crowning piece of the Sarnath pillar shows four lions back to back. The lions are represented in the roaring mien, and they verily visualize the concept of the reverberation of the *Dharmaghoṣa* (proclamation of the Law), in preference to the *Bherighoṣa* (trumpetting for war), at the four quarters, as was what Aśoka had envisaged through his IVth Rock Edict.

In the theriomorphic visuals Aśoka did exhibit a distinct preference for lion and the elephant understandably for their intimate natal linkage with the Buddha. Apart from the Elephant Capital of the Sankisyā Pillar, there is the representation of an engraved figure of the elephant on the Kalsi Rock Edict. Also, there is the half-carved-out figure of the same animal in the Dhauli rock which contains the Kalinga Rock Edict. These two are accompanied respectively with identificatory inscribed labels : *Śveto* (the White One) and *Gajatama* (The Super Elephant). These doubtless refer to the legend of Buddha's birth associated with a white elephant of huge size. In the dream scene of queen Māyā, Buddha's mother, shown in a Bharhut medallion also is represented an elephant of great size with the inscriptional lable reading as *Gajatama.* Incidentally, the ogee arch of the facade of the Lomas Rishi Cave in the Barabar hills of Bihar, associated with Aśoka's patronage to the Ājīvika sect, a series of elephants form the decorative element. It is apparent that the lion and the elephant being of multi-religious symbolism, Aśoka had a preference for

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these two animals bearing Buddhistic intimacy. In fact, the aniconic symbolism of Aśokan visuals invariably has a covert linkage with Buddhism, although it retains a deceptive generality.

Aśoka's selective preference for four animals to serve as the crowning pieces of his pillars and for the decoration of the abacus of the capitals has already been commented on. The relevance of these animals to the directional symbolism has also been pointed out. It seems that in the Indian tradition these four animals constituted a concept-group to express the idea of the combined command over the four primary directions. In this connection reference should be made of the Moon Stones, bearing astrospatial significance, from the monuments of Anuradhapur in Ceylon. On the peripheral segment of these Moon Stones one can see the carved representations of the four animals of Aśoka's preference, namely, the lion, elephant, bull and horse, shown alternatively in the crescent-shaped alignment of a row. Anuradhapur Moon Stones are approximately of the 8th century date which is quite distanced from the period of Aśoka. However, it should be mentioned that these animals almost in similar dispensation, are to be noticed also in the Moon Stones discovered from Nagarjunikonda, and placed to the 4th century A.D. The reason for referring to these facts is not to suggest that there was any dependance or influence of either side for preferring these four animals in the representational art. It seems that a traditional pool of concepts related to astro-space was the source from which Aśoka drew his inspiration to select these animal-motifs serving him in double ways : to suggest the dissemination of his and his *dhamma's* domination over the four directions, and to symbolically percolate the biographical narratives pertaining to the life of Gautama Buddha, the founder of Buddhism.

Another enigmatic figure-motif deserves mention. In the abacus of the lion-capitals, one at Rampurva and the other at Sanchi, one can notice a row of the representations of pecking geese. The incorporation of these could not be an arbitrary exercise. But it is difficult to find out the exact meaning of them. Since in both the cases, where the geese appear in the abacus, the lion, the visual symbol of the Buddha as the *Śākyasiṁha* (the lion of the Sakya race), constitutes the crowning capital, it has been suggested that the geese symbolise the disciples of the Buddha. But the confusion arises because a row of geese is also represented in the carvings of the *Vajrāsana* at Bodhgaya. The above interpretation of the geese-motif does not seem to be too happily fitted here.

Drawing sources from the epics, Sivaramamurti suggests that the geese symbolically represent the supporters of great architectural edifices. In fact, in Pallava architecture the geese often figure as the caryatids or as decorative motifs. Interestingly, a row of geese motif is invariably there in the Moon Stones from Anuradhapura, as also those from Pollonaruwa in Ceylon. The meanings of their presence seems to be different, although a lingering tradition of the symbolism of the geese-motif seems to have existed in India.

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However, the specific association of the geese motif with Aśoka's *dhamma* or his Imperial Ideology, if any, cannot be easily made out.

Vogel associates the geese with the Enlightenment of the Buddha, and states that the geese had offered reverential homage to the Bodhisattva Gautama as and when the latter occupied the *Vajrāsana* at Bodhgaya. The *Buddhacharita* of Aśvaghoṣa also refers to various types of birds having paid homage to the would—be Buddha by way of doing the *pradakṣiṇa* (going round in the clockwise direction). These references can perhaps explain the occurance of the geese-motif in the carvings of the *vajrāsana* at Bodhagaya. But the relevance of the geese in the abacus of two of Aśoka's lion capitals, mentioned above, still remains enigmatic.

The geese in the abacus of the Rampurva Lion Capital and of the Sanchi Lion Capital cannot be unrelated to Aśoka's programmatic scheme of things. It should be pointed out that the selection of the geese or the *haṁsa* cannot but be intentional. It should be remembered that the *haṁsa* has an all-pervading nature : it can comfortably move on the land, can float in the water, and can even hover in the air. In other words, it has an access to all the three spheres of the universe. Thus the *haṁsa* symbolises the limitlessness of mobility. At the same time, it bears the characteristics of purity or uncontaminatedness by virtue of its ability to shed the watery particles out of the wings and feathers within moments. The last feature is emblematic of non-involved detachment. These characteristics make the *haṁsa* an eminent symbol of pure and all-pervading religion, as Aśoka's *dhamma* really was. It is not unlikely that herein lies Aśoka's deceptive ploy of propagating his concept of *dhamma* which doubtless had a good measure of Buddhistic content.

It has been maintained by some that Aśokan Edicts refer to the Pillars or the *silāsthambha,* but maintain silence about the visuals atop them. It would have been quite unusual for Aśoka to keep absolute silence over this important matter. But, as it seems plausible, Aśoka might have made covert references to the visuals in his own characteristic deceptive mode of communication. The covert references might have escaped the notice of scholars. The careful reading of the IVth Rock Edict is revealing indeed in this context. A portion of it is generally translated as follows :

"But now, in consequence of the practice of *Dhamma* by king Priyadarśin, Beloved of the gods, the sound of drum has become the sound of *Dhamma,* after (his) having shown to people spectacles of aerial chariots, spectacles of elephants, masses of fire and other divine representations."

Although the relevant passage has been read and interpreted variously by different scholars, to our mind it bears a generalised reference to the visuals atop the Pillars. The expression *anyāni divyāni rūpāṇi* is quite significant. The word *divya* means 'divine' in

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an indirect way. Its basic meaning should be playful, lively, sportive or even animatic. Thus *divyāni rūpāṇi* may refer to the lively animal forms crowning the Pillars. Moreover, the word *vimāna* should not necessarily mean only the "aerial chariot". It may refer to anything that has been distorted due to optical perspective, or has been diminished or enlarged for conceptual exigency. Aerially distanced visuals of the Pillars are verily *vimāna* or devoid of the real *māna*, i.e., measuremental standing. *Hastidarśana* can easily be a reference to animal figures like that of the elephant. *Agni-skandha* might mean the Pillar with shining glow like fireflame.

The above interpretations are being suggested in view of the fact that Aśoka had a predilection for covert communication. Not that he was not frank in his statements, but occasional metaphorism of his language cannot escape notice. It seems that he was possibly sceptical about the acceptability of the visuals of the pillars, more so because Buddhism was a Faith disfavouring any showy posture. The IVth Rock Edict passage, referred to above, contains the *alibi* for his taking recourse to the use of the visuals of the Pillars.

Aśoka desired that his Edicts become timeless (cirasthitikā), and he also desired to be of universal relevance *(sakaladeśavṛittikā).* Aniconic symbolism was the appropriate means to go by for transcending time and space. That is why aniconism is the key-note of the pictorial programme of Aśoka's *Dhamma.*

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ASHOKA : HIS IMAGES

SHYAMALKANTI CHAKRAVARTI

Paradoxically enough, a king who took the epithet of *priyadarshana* or *priyadarshin*, 'one of amiable look' was physically an ugly man. Ashoka, the great Maurya monarch was according to legend born to a mother of ambiguous origin. The Buddhist *avadana* literature mentioned her as Subhadrangi or Janapadakalyani, the daughter of a *brahmana* of Champa who gave her marriage to king Bindusara, the king of Pataliputra[1]. The Ceylonese source describes her as Dharma. It is said that when the boy was born to Bindusara and Subhadrangi, people asked what his name should be. Ashoka's mother replied—"When this baby was born, I became 'without sorrow' (*a-shoka*) so the child was given the name Ashoka."

Legend also has it that as a young boy Ashoka was ugly in appearance and disliked by his father. His body had bad skin and it was rough and unpleasant to the touch. The Ceylonese chronicle *Dipavamsa*, on the contrary, mentions him as *priyadarshana* elaborating the meaning to the extent of 'one whose handsome appearance was comparable to that of the moon'. The physiognomical comprehension about the king, as gleaned from both Pali and Sanskrit texts has for long intrigued the students of Indian history. The literature represents him as a person of ugly appearance and fierce nature, evidently to build there upon the grotesque and repulsive story of how he came to pass as chanda Ashoka, the wicked. But in art, as evidenced by his depiction in a number of gateways at Sanchi Stupa, the king looks very elegant and manly having all qualities of a great man.

The earliest literary evidence of Ashoka's likeness is available in the *Ashokavadana*. It is said that after the death of his father, Ashoka was installed to the throne by Bindusara's ministers, who knew that he was the fittest of all of his sons to succeed the king. On learning this, Ashoks's brother Shusima hastened to return to the capital Pataliputra. All attempts to obstruct his advance was hurriedly made by the new prime minister Radhagupta guarding the two gates of the city by two great warriors of the kingdom and himself being stationed at the third gate which was in the eastern direction. In front of the gate Radhagupta set up an artificial elephant *yantramays hastin*, on the top of which he placed an *image of Ashoka* that he himself had fashioned. Presumably this was a metal sculpture or a wood carving which suited the mechanical elephant.

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On another occasion a golden statue of Ashoka had been made by a monk called Indra (dBan po) when the king prayed to Buddha for helping him to get some treasure to assist some merchants who had undergone great losses. It is interesting to note that the golden statue of Ashoka was loosing its height but when Ashoka began to do good deeds the statue grew larger and larger.

A Tibetan thanka depicting the *Avadana* stories No. 73 and 74 delineates this anecdote. On the upper as well as the lower right panels of the thanka the liberality of Ashoka and the king's offering of mangoes to the people have been depicted in conformity with the *Avadana* text.

The story begins on the left, at the height of the central figure : Ashoka's liberality : the nagas robbing the merchants of their treasures; the king restores their treasures to them : the arhats' arrival through the sky; they are received and entertained by Ashoka, in the centre, above, and on the upper margin to the right, Upagupta's sermon.

The *Avadana* is represented along the edge of the thanka, to the right. To the left the sick king is giving the mango to those who solicit gifts. To the right, the king, his gift of the earth underneath the ransome.

Be that as it may, we come across the extant examples of Ashoka's image on the gateways of the Sanchi *stupa* carved in stone in the 1st century B.C. At Sanchi the figures of Ashoka appears four times in the same sequence of going to pay his celebrated visit to the *bodhi* tree. Two of these occur on the west pillar of the southern gateway, one on the front of the eastern gateway while the remaining one on the ground balustrade of the stupa No. 2 of Sanchi.

Towards the middle of the 3rd century B.C. Sanchi, then a small village witnessed one of the most sensational visits of an outsider. It was Ashoka who came in great pomp to pay homage to the tree which had sheltered Buddha's enlightenment. According to the *Divyavadana*, the bodhi tree at Bodh Gaya was almost in the state of peril due to the jealous witchcraft of his second queen Tishyarakshita. The broken-hearted emperor came in the nick of time to rejuvinate it with perfumed water. This incident had become a favourite theme with the stone carvers at Sanchi.

In the west pillar of the southern gateway, on two middle panels, the scene of royal visit has been carved very faithfully. The middle panel of front face shows the king in a chariot accompanied by a suite progressing for Bodh Gaya.

The panel on the east-face places the king between his two queens with other female attendants. Supported by his consorts the king is, as it were, about to faint in swoon out of immense grief and his tottering attitude is explicitly discernible. The female attendants are holding the umbrella and the pitcher containing water which was being carried for sprinkling at the roots of the tree.

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On the bottom lintel of the middle section of the architraves, in front of the eastern gateway there is an elaborate depiction of Ashoka's visit to the Bodhi tree. Here Ashoka is seen twice, dismounting from his kneeling elephant and subsequently paying homage to the Bodhi tree along with his queen. The panel also depicts female attendants carrying umbrella and flywhisk, a band of people carrying flutes, conches and drums, besides some infantry armed with swords, spears and bows. Four personages are seen advancing with pitchers full of scented water for watering the sacred tree. The royal procession seems to have attained a dignified weight in this stone panel.

A relief on the ground balustrade of the Stupa No. 2 offers us another depiction of Ashoka at Bodhgaya ; leaning on his two queens, and surrounded by three attendants who carry the umbrella and the flywhisk.

The sculptural examples of Ashoka at Sanchi are, no doubt, a stylised version in art form conceived after two hundred years of his own time but they have invariably belied the literal description of the king as an ugly personality. The sympathetic expression of his face, the modesty of his headdress, simple drapery and ornaments project the king as a pleasing personality with a simplicity that reveal his dignified magnanimity.

Two stone images with inscriptions identifying the monarch as Ashoka have been discovered recently in India and China. These discoveries are of much significance since the one found in Indian soil near Sannati in Karnataka is contemporaneous with the Sanchi specimens discussed above. While the Chinese find carved in the Gandhara style is dated and briefly mentions the king as a propagator of Buddhism.

At Kanaganahalli, situated on the left bank of the river Bhima, about three kilometres south of Sannati a great stupa has been unearthed by the Bangalore circle of the Archaeological Survey of India in 1998-99. A delicately carved stone panel with a figure of a man flanked by four women-three of them probably attendants holding parasole (*raja-chhatra*) and yaktails (*chamara*) was once a part of this stupa architecture. The figures chiselled in high relief on the slab of stone plaque represent a royal couple and the retinue. The right limb of the fragmentary stone frame has been designed as a pillar with full and two semicircular floral motifs surmounted by an abacus on which is resting a squatting animal. Below the feet of the human figures on the frame is a row of geese running to fly as if. As an excellent specimen of sculptural art of the pre-Christian period, the panel could have drawn our special attention but five letters of 1st century B. C. Brahmi script inscribed on the upper frame of the stone is sure to arouse more excitement of scholars. These alphabet on stone *ra yo a sho ka* unquestionably identifies the royal personage as king Ashoka who included the area of the find spot of this sculptured panel in Mauryan *vijita* territory during the Kalinga war.

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A dated sandstone image of the emperor discovered in 1995 from the Sian desert area of China carved in the style of Gandhara art belongs to Southern Dynasties (*Liang*) period of the 6th century A. D. During our recent visit to Tokyo in August, 2000, on the occasion of the inauguration of the *World's Four Great Civilisation* exhibitions we noticed a sandstone standing image identified on the strength of an inscription on the backslab as the emperor Ashoka. A proud possession of Chengdu Municipal Institute of Cultural Relics and Archaeology, China, this stone image of the Maurya king (height 48 cm.) was dedicated by a Buddhist monk in memory of the departed child in the year 551 A. D. According to one interpretation "this statue with its shins exposed is quite suitable for ancient Indian emperor Ashoka who walked around the country to build the stupas". Traditions record that king Ashoka had caused to be built 64000 such stupas for the propagation of Buddhism.

A free translation of the inscription executed by Prof. Nakado Odani of the Toyama University, Japan, is noted below : 'In the 5th year of the Tai-qing (A. D. 551), on the 30th day of the 9th month, a Buddhist, Du Seng-yi, made a venerable "royal Asokan statue" in honour of his dead son, Li Fo-shi, so that all his living and deceased relatives, wherever they were reborn, would have a chance to listen to the Buddha's sermon and attain *nirvana* quickly. Also, so that all the beings of the seven generations and the six forms of existence may share of this wish as well.' [Inscribed] with adoration.'

Standing in *samapada* posture on a double petalled lotus the figure of Ashoka puts on normal robe of a Buddha or Bodhisattva suspended upto shin. A broken halo with five figures of seated *dhyani* Buddhas is seen behind his right neck. The curly hair with top knot and the moustaches can not however distinguish him from a Bodhisattva of Greco-Roman style. It is only with the evidence of the eight line inscription in Chinese character of the mid-sixth century, the image can be definitely identified as that of the Maurya monarch who, it seems, enjoyed a great popularity with the people of a distant country like China even after the elapse of eight centuries.

As already mentioned the monk painters of Tibetan thankas favoured the portrayal of Ashoka's likenesses on painted scrolls. The king does not figure here as the central image. On the contrary, he has been picturised along with Buddhist divinities, *arhats*, monks and other religious preceptors. The thanka (Acc. No. 227) of the goddess Sitatapatra Aparajita in the possession of the Indian Museum places the king flanking on one side of Dhyani Buddha Vairochana. His name inscribed in Tibetan script by the side of the painting, gives clue to his identification. We may cite more examples of his imaginary portraiture from the host of Tibetan thankas where the king is seen wearing a monk's cap and his body is draped by a monk's robe.

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Ashoka is also a favourite subject of painting by the modern artists of Bengal school. Pramode Kumar Chattopadhyay (1885-1979) painted him singularly, while Prabhat Mohan Bandyopadhyay (1904-) has depicted the king paying visit to Lumbini. Upendra Maharathi (? - 1981) of Orissa who was himself a scholar of Buddhist literature, depicted the 'king sending Sanghamitra with Bodhi tree sapling to Ceylon'. Pulin Behari Dutta also excelled in painting the life of Buddha and Ashoka. His two paintings 'Ashoka and Upagupta' as well as 'Conversion of Ashoka' deserve special mention here. The last but not least attempt of fashioning sculpture in metal was executed by an eminent modern sculptor Meera Mukherjee whose exquisitely delicate modelling of Ashoka's metal sculpture inspired by the *dhokra* craftsmanship is a noteworthy addition to the series of images of this great monarch who himself was the doyen at the dawn of Indian sculptural art.

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NON-BUDDHIST RELIGIO-PHILOSOPHICAL SYSTEMS IN MAURYAN INDIA

N. N. BHATTACHARYYA

Though institutionalised religious systems in the Semitic or Western sense did not develop in India before the advent of the *bhakti*-oriented theistic sects, such as Vaiṣṇavism or Śaivism or the Mahāyāna in Buddhism or the cultic forms of Jainism, all of which seem to have come into existence in the Maurya period (*c*.324-186 B.C.), there remains a large proportion of thought-complex associated with each of these systems which has not been adequately preserved in contemporary independent documents unlike those of the preceding ages in which we have the stratified Vedic literature starting from the *Ṛgveda* down to the *Upaniṣads* and hence to be studied only in the light of fragmentary extracts or notices as have managed to survive as scattered remains in some other works meant for essentially different purposes. The pre-Mauryan thought-complex, as has come down to us from the Vedic sources and pervaded all the subsequent religio-philosophical systems, Buddhism and Jainism included, may be subdivided into the following categories—cosmogony and cosmology, psychological and eschatological reflections, epistemology and its corresponding theories of the *absolute* in its relation to the individual, the sequential growth of the concepts of dualism manifested in the Sāṅkhya philosophy which exerted a great influence not only on the Buddha, Lord Mahāvīra and their contemporaries but on the *vyūha* doctrine of the early Bhāgavatism and the Pāśupata system as well ; of monism, pure and qualified, manifested in the Vedānta providing the crucible of the theoretical development of all the existing major religious systems ; of a sophisticated reinterpretation of ancient Vedic ritualism as found in the Mīmāṃsaka tradition with its emphasis on terminological justifications which could not be ignored by any school of thought ; of the logical system of Nyāya which the Buddhists and the Jains eventually accepted by giving up their earlier formulations on the subject ; of the doctrine of *karma*, transmigration and metempsychosis to which all the religious sects and most of the philosophical schools subscribed ; of atheism which had characterised early Buddhism and Jainism as also the materialistic schools ; of *yoga* and mysticism ; and finally of suffering and liberation.

Among the sources pertaining to the religion and philosophy of Mauryan India the first and foremost are the second generation *Upaniṣads*, especially the *Śvetāśvatara* (1. 2 ; 6. 1 ff.) and the *Maitrāyaṇī* (6. 14 ff ; 6. 20 ; 7. 8 ff) as also the *Māṇḍukya Kārikās*

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(1. 7-9 ; 2. 20-28) which mention, besides atheists, pseudo-ascetics, Kāpālikas and the followers of Bṛhaspati, those doctrinaires who proclaim *Kāla* or time, *svabhāva* or nature, *niyati* or fate, *yadṛcchā* or chance, *bhūtas* or the elements, *prāṇa* or breath, *quṇas* or qualities, *diśaḥ* or space, *manas* or mind, *buddhi* or intellect and so forth as their first Principles. In the *Śvetāśvatara* (1. 1-2), composed about the fourth century B.C. we come across eight views regarding the origin of life and universe. These are Īśvara, Kāla, Svabhāva, Niyati, Yadṛcchā, Bhūta, Yoni and Prakṛti. Īśvaravāda is absolute theism. The *Śvetāśvatara* postulates a monotheistic concept of Rudra or Śiva who is equated with *brahman.* Most of the traditional philosophical schools were opposed to Īśvaravāda or absolute theism, though it was popular among the masses. The Mīmāṃsakas did not believe in the concept of a creator God on the ground that if God were to be regarded as a free agent he could not have the desire to create and if regarded as an agent under bondage he could not have the capacity to create. According to the Sāṇkhyas, perception, inference and testimony do not prove the existence of God. The same view was held by the Buddhists, Jains and Cārvākas. It was only the Nyāya-Vaiśeṣikas who tried to establish theism on the basis of reason. Being confronted with the question how the unintelligent atoms would combine themselves to form matter, the Nyāya-Vaiśeṣikas held that just as a potter made a pot with the help of a material cause, namely, clay, so also God as an intelligent agent had combined the atoms to fashion worldly objects. But their opponents argued that the God of the Naya-Vaiśeṣikas was therefore no better than a potter because he was an agent under bondage requiring a frame or body for himself, the materials of creation, and the will and capacity to create. This atheistic trend, as we shall see later, started from about the sixth century B.C., and it was continued in the Maurya period and after. But it was a matter of philosophical disputation. Common people were, however, instinctively theistic, because they required a God who would protect them from worldly dangers, forgive their frailties and bestow upon them his grace *(prasāda),* which view point has found the most powerful expression in the *Bhagavadātā.* This accounts for the origin and development of theistic sects like Vaiṣṇavism or Śaivism in the Maurya age and the deification or the Buddha and the Jainas. Absolute theism was also patornised by the kings and the emperors which was conductive to royal absolutism as well. As Gibbon said in a different context : "The various modes of worship which pre-vailed in the Roman world were all considered by people as equally true, by philosophers as equally false and by the magistrates as equally useful."

Among other First Principles mentioned in the *Śvetāśvatara,* the doctrine of Kāla or time is very ancient. In the *Atharvaveda* (19.44) Kāla has been described as the cosmogonic principle and the lord of everything. The *Śvetāśvatara* (6.6) also upholds the some view. In the Buddhist doctrine of *Kṣaṇikavāda* the Kāla concept has not been ignored. It is also one of the nine *tattvas* of Jain philosophy which has been viewed as an *anastikāva* substance, that which is without any form. The doctrine of *Niyati* or destiny was given a religio-

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philosophical turn by the Ājīvikas in the sixth century B.C. The exponents of Ājīvikism were Puraṇa Kassapa, Pakudha Kacayāyana and Gośāla Maṅkhaliputta. Puraṇa believed in the doctrine of non-causation and non-action *(Digha* 2 ; *Sūyagaḍa* 1.1.1.13 ; *Aṅguttara* 3. 383 ff ; *Sumaṅgala* 1.162). The *Aṅguttara* ascribes parts of Gośāla's doctrine of Puraṇa while in the *Saṃyutta* the names of Makkhali Gosāla and Puraṇa Kassapa are significantly combined. The Tamil poem *Nīlakeci* and Guṇaratna's *Tarkarahasyadīpikā* also refer to Puraṇa as the founder of the Ājīvika system. Puraṇa's fatalistic doctrine had closeness to that of Pakudha Kacayāyana. According to him, a being is composed of seven elements which are neither created, nor moulded, are barren and fixed as a rock, do not produce anything, do not interact on one another, neither move for change nor hinder one another so as to cause pain or pleasure. The *Majjhima Nikāya* (1.513 ff) incorporates with Pakudha's doctrine part of Gośāla's fatalistic creed and one of the Chinese versions of the *Samaññapha Sutta* (W.W. Rockhill, *Life of Buddha,* London, 1884, 255 ff) makes Pakudha a determinist. Gośāla Maṅkhaliputta was the greatest exponent of Ājīvikism who probably belonged to the spiritual lineage of Nanda Vaccha and Kisa Samkiccha. From the combined testimony of the Buddhist and Jain sources we learn that according to Gośāla, all beings are subject to a fixed and unchangeable series of existence, each of which has its own unalterable characteristic. He denies the effects of action and energy, since he holds that every being is helpless, unable neither to help himself nor to others. This doctrine has been described in the *Majjhima Nikāya* (1.409 ; 2.121) as *ahetuka* (denying cause) and a *kiriya* (denying the effects of action) while in the *Aṅquttara* (1.287) it is said to be a doctrine which denies the effects of deeds *(karma)* activity *(kiriya)* and energy *(viriya)*.

That the Ājīvikas were an important religious sect in the Maurya period is attested to by the inscriptions of Aśoka. His dedication of the Barabar hill caves to the Ājīvikas is an example of this. His grandson Dasaratha who also bore the epithet *devānāṃpiya,* was a patron of the Ājīvikas. This is established by three short dedicatory inscriptions incised on the walls of the rock-cut caves which Dasaratha bestowed upon the Ājīvikas on the heights of the Nagarjuna hills. The Sudāmā (Nyagrodha) cave excavated by Aśoka for the Ājīvikas consists of two apartments, of which the outer one is rectangular, and beyond this, at the back and separated from it by a solid wall with a narrow passage connecting the two, there is an empty circular chamber. The outer chamber is covered by a barrel vault and the inner by a hemispherical dome. During the Maurya period Ājīvikism spread from Avantī to Aṅga, and it is almost certain that, though Buddhism and Jainism denounced Gośāla and his creed they quietly absorbed some of the tenets and practices of his school, and had to reckon with and combat some others. In South India also the Ājīvikas had some centres which is indicated by the combined evidence of the *Maṇimekalai, Nīlakeci* and *Civañānacittiyār.* The Ājīvikas had also a few centres in Bengal. According to the *Bhagavatī Sūtra* both Mahāvīra and Gośāla spent some years in Paṇitabhūmi which was included in

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the Vajjabhūmi of the Rāḍha region, and this accounts for the spread of Ājīvikism in Bengal along with Jainism. In the Buddhist *Divyāvadāna* it is said that Aśoka by mistake ordered a mass-slaughter of eighteen thousand Ājīvikas of Pundravardhana for offending the Buddhists, though the real culprits were the Nirgranthas. In the Chinese version of the *Divyāvadāna* the offenders are described as Nirgranthaputras. This legend must have been invented to prove how zealous a Buddhist king Aśoka was, which he was not evidently as is proved by his inscriptions. Pāṇini's description of the Maskarin sect in the Rāḍha country seems to accord with the Ājīvikas. The author of the *Divyāvadāna* seems to have confused the Ājīvikas with the Jains. Since there were many common elements in both the systems and there was a similarity between the jain and Ājīvika monks in regard to their way of life, prayer, fasting, observances and so forth, they did not appear very differently in the eyes of their Buddhist rivals.

In the *Śvetāśvatara* list comes next Svabhāvavāda according to which the universe is law-governed and guided by cause-effect relations. The sharpness of thorns, the attitude of birds and beasts, the sweetness of sugarcane—everything is due to Svabhāva—the inherent nature of things. Accordings to this nature of things the basic elements combine to form the worldly objects. But whereas the doctrine of Svabhāva has a scientific basis in the form of cause-effect relation, the doctrine of Yadṛcchā, also found in the *Śvetāśvatara,* holds that everything is accidental. Natural law is absent in the doctrine of Vadṛcchā which maintains that the world is a chaos and ascribes whatever order is seen in it to mere chance. Unfortunately, in the religions and philosophical literature of India, Svabhāvavāda has been presented in a distorted way mainly because the texts of this school are lost. In the *Laṅkāvatara* (Kyoto ed. 1923, 184), the *Buddhacarita* (9.52) and the *Mahābhārata* (12.179 ff) we have a few glimpses of Svabhāvavāda which prove that they were basically materialist so far as their world-view was concerned *(svabhāvaṃ bhūtacintakāḥ).* In the Indian tradition Svabhāvavāda is often equated with the Bārhaspatya, Cārvāka and Lokāyata doctrines. A few sects of the Akriyāvādins of the Maurya period mentioned in the Jain literature, like Sāyavāda, Samucchedavāda, Na-santi-paralokavāda, etc., as also the Adhityasamutpannika, Ucchedavāda, Dṛṣṭadharmani rvāṇavāda etc., found in the Buddhist works, have much in common with the Svabhāvavādins. The doctrine of Ajitakeśakambalin as found in the Samaññaphalasutta of the *Dīgha Nikāya* should also be mentioned in this connection. The Svabhāvavāda is based on five basic principles : (1) Bhūtavāda, according to which the four material elements—earth, water, fire and air—are the only real entities by the combination of which everything is formed ; (2) Dehātmyavāda, which means that the concept of soul apart from the body is baseless ; (3) Pratyakṣaprāmāṇyavāda, which means that of all the sources of valid knowledge, perception alone is acceptable ; (4) Svabāva, which recognises that things are as their nature make them ; and (5) Paralokavilopavāda, which holds that there can be no such thing as the other world. All these culminated into the Cārvāka philosophy of later times.

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These philosophical schools were in actual existence in Mauryan India. The *Śvetāśvatara* evidence proves this conclusively. Since this Upaniṣad was composed in the fourth century B.C. it should be treated as the most important source for the study of the religion and philosophy of the Maurya age. The Pali canon is not as old as the First or Second Buddhist Council, but the existence of a nascent canon in the time of Aśoka may be inferred from his edicts. References to persons well versed in scriptures in the inscriptions of the second century B.C., and the reliefs and inscriptions on the railings and gateways at Bharhut and Sanchi presuppose the existence of some works on Dharma and Vinaya. The *Milindapañho* is the earliest evidence of the existence of the three Piṭakas and five Nikāyas. The *Mahāvagga* and the *Cullavagga* belong to the earlier strata of the Pali canon, and the latter work refers to *Sutta Vibhaṅga* and the five Nikāyas. What we want to say is that the Pali canon in its present form must be posterior to Aśoka, but that does not imply that it is unable to convey facts of a slightly anterior age. The same also holds good in the case of the Jain canon which also contains the world-views put forward in the *Śvetāsvatara.* Although the Śvetambara canon was compiled at a much later date, but indications are not altogether lacking that even in this canon we possess something of the ancient books. The various scattered statements in Jain canonical works refer to 363 philosophical schools grouped under 180 forms of Kriyāvāda, 84 forms of Akriyāvāda, 67 forms of Ajñānavāda and 32 forms of Vinayavāda which on the one hand correspond to 62 *darśanas* enumerated under two distinct categories—Purvānta Kalpika and Aparānta Kalpika—in the Brahmajālā Sutta of the *Dīgha Nikāya* and on the other, from the view point of contents, to the eight conceptual First Principles as enumerated in the *Śvetāśvatara.* The evidence of the *Mahābhārata* should also be taken into account because this epic was composed between 400 B.C. and 400 A.D. and as such contains much about the thought—ferment of the Maurya age. Its philosophical sections dealing with Kāla (time), Dhiṣṭa (destiny) or Daiva (fate) as also materialistic, sceptic and agnostic systems remarkably agree with what the rest of our sources have given us.

In the *Śvetāśvatara* list the doctrines of Bhūta, Yoni and Puruṣa are mentioned. In some Upaniṣads the term Prakṛti is used as a substitute for Bhūta and Yoni. These four concepts denote the earlier stages of the evolution of the Sāṅkhya and Tantric ideas The concept of Yoni or Prakṛti connects the mystery of nature with that of the human body, from which it transpires that the birth of the universe is the result of the same or similar process as the birth of a human being. The doctrine of Bhūta suggests that everything of the world is created by the combination of four or five material elements as is also held by the Svabhāvavādins. These material elements are called the five *mahābhūtas* in the Sāṅkhya and are regarded as the evolutes of Prakṛti. Without going into details regarding the origin and development of the Sāṅkhya it may be said that this doctrine had a tremendous impact on the religion and philosophy of the Maurya age. Though the Sāṅkhya texts, as

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we have them in their present forms, belong to a much later date, the Sāṅkhya references as found in the *Mahābhārata,* especially the *Bhagavadgīta,* conclusively prove that it was a well known system in the second century B.C. The influence of the Sāṅkhyas on early Vaiṣṇavism, as current in the Maurya period, may be attested to by the *Vyūha* doctrine, according to which Vāsudeva created from himself the *vyūha* Saṅkarṣaṇa and also *prakṛti* ; from the association of Saṅkarṣaṇa and *prakṛti* sprang the *vyūha* Pradyumna and the Sāṅkhya category of *manas* of buddhi ; from the combination of Pradyumna and *manas* arose the *vyūha* Aniruddha and the Sāṅkhya category of *ahaṃkāra* ; from the combination of Aniruddha and *ahaṃkāra* sprang the *mahābhūtas* or material elements. The *Ahirbudhnya Saṃhitā,* an early though post-Maurya Pāñcarātra work, refers to the synopsis of contents of a now—lost very ancient Sāṅkhya text known as *Ṣaṣṭitantra* in which it is easy to recognise some Brahmanic systems, some deistic sects, some pre-Brahmanic speculations, as also at least a few that rose to prominence subsequently to the preiod of the Upaniṣads. The schools of thought mentioned herein are Brahma, Puruṣa, Śakti, Niyati, Kāla, Guṇa, Akṣara, Prāṇa, Kartṛ Sāmi, Jāñna, Kriyā, Mātrā and Bhūta. Some of the schools, already referred to above on the basis of the *Śvetāśvatara* and other sources, must have been is existence during the Maurya period.

Pāṇini's *Aṣṭādhyāyī* (fifth century B.C.) and patañjali's *Mahābhāṣya* (second century B.C.) undoubtedly testify the wide prevalence of Bhāgavatism during the Maurya period which both the texts cover. In *Aṣṭādhyāyī* (4.3.95) the Sūtra has *bhaktiḥ* (devotion) in which it is said that when a *bhakta* (devoted to some one) is denoted, the part of speech should be formed by suffixing the first case-ending to the word denoting the object of *bhakti.* In Pāṇini (4.3.98) occurs *vāsudevārjunābhyāṃ-bun* which implies that in order to denote the devotees of Vāsudeva and Arjuna, the suffix *bun* is to be added to the said names. These suffixed words, according to another rule of Pāṇini's grammar, should be Vāsudevakaḥ and Arjunakaḥ. Commenting on this Patañjali says that since both Vāsudeva and Arjuna were great Kṣatriya warriors, another Sūtra of Pāṇini, the next one, could be used in this context which is *gokṣatryākhyebhyo vahulaṃ buñ* (4.3.99) implying that for denoting the devotees of well known and reputed Kṣatriyas the suffix *buñ* is to be added to the words meaning the same such as *glaucukāyanakaḥ, aupagavakaḥ, nākulakaḥ, sāhadevakhaḥ, sāmbakaḥ,* etc., According to Patañjali, Pāṇini used another Sūtra to denote the *bhaktas* of Vāsudeva and Arjuna because he considered both of them not as simple kṣatriya heroes but as divine entities. Vāsudevārjuna is a *dvanda*-compound which ought to have been Arjunavāsudeva according to the Pāṇinian Sūtra *alpāctaras* (2.2.34), because compared to Vāsudeva, the word Arjuna has less vowel intonations. But the *vārtika* of Kātyāyana (third century B.C.) on this Sūtra *abhyarhitaṃ ca pūrvaṃ nipatatīti vaktavyam* establishes that Pāṇini had also the view that in the case of *dvanda*—compound the more honourable name would be put first. Thus Vāsudeva was more honourable than arjuna having larger votaries.

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Patañjali commenting on Pāṇini *(hetumati ca* 3.1.26) refers to the devotees *(bhaktas)* of Kaṃsa and Vāsudeva in connection with a dramatic performance in which some actors played the part of Kaṃsa's followers and others of Vāsudeva's. Patañjali while commenting on one of the *vārtikas* of Pāṇini's *avyayāttyap* (4.2.104) has referred to Vāsudevavargyaḥ and Vāsudevavargīṇaḥ, both denoting the devotees of Vāsudeva Kṛṣṇa. The evidence furnished by Pāṇini and his commentators convincingly prove that the Vedic cult of Viṣṇu was not only transformed into the cult of Vāsudeva-Kṛṣṇa in the Maurya period, but also the Kṛṣṇa legends, such as the slaying of Kaṃsa, were well known.

More categorical statements have been made by Pāṇini in regard to Saivism. But before dealing with Pāṇini, we should return once again to the *Śvetāśvatara* which is the first among the second generation Upaniṣads to uphold a monotheistic cult of Śiva. In *Śvetáśvatera* (4.10), Śiva has been invoked as Maheśvara who is lauded as the lord of *māyā* represented as *prakṛti* and who is manifested in the universe in various forms. There is no god apart from Rudra who regulates the world by his won power, who is the creator, sustainer and destroyer and in whom the universe resorts during dissolution *(Śvet* 3.2). Such expressions as *śivaṃ sarvabhūteṣu gūḍham, tamīśvaraṇáṃ paramaṃ maheśvaraṃ tvaṃ devatānāṃ paramañca daivataṃ, viśvasya sraṣṭāramanekarūpam*, etc., are indicative of the *bhakti* doctrine associated with Śiva. Pāṇini in his *Aṣṭādhyāyī* (4.1.49) refers to four names of Śiva which are Rudra, Bhava, Śarva and Mṛḍa. The existence of Śaiva sects is indicated by Pāṇini's *śivadibhyon sūtra* (4.1.112) according to which the part of speech obtained by suffixing an to Śiva points to his *apatyas* or children and *bhaktas* or devotees. Patañjali in his *Mahābhāṣya* has referred several times to Śiva and Rudra. On Rudra he says twice that animal-sacrifice was offered to this god. Again in two places he refers to Rudra's association with medicine *(śivā rudrasya bheṣaji)*. Commenting on Pāṇini's *devatādvandve ca,* (6.3.26) and Kātyāyana's *vārtika* on it *brahmāprajāpatyādīnāṃ ca,* he illustrates three *dvanda*-compounds such as *brahmā-prajāpati, śiva-vaiśravaṇau* and *skanda-viśākhau.* Commenting on Pāṇini's *jīvikārthe cāpaṇye* (5.3.99) he refers to the images of Skanda and Viśākha along with those of Śiva. More specialised references to the devotees of Śiva are found in Patañjali's commentary on Pāṇini (5.2.76) which is *ayahśūladaṇḍājināḥbhyāṃ ṭhakṭhañau.* In this context, he refers to the Śivabhāgavatas and says that according to Pāṇini the suffixes *ṭhak* and *ṭhañ* when added to *ayahśūla* and *daṇḍājina* should denote such persons who want to achieve their ends by using the spear made of iron rod *(daṇḍa)* and animal skin *(ajina)*. These people have been described by Patañjali as the Śivabhāgavatas.

Thus from the combined testimony of the *Śvetāśvatara,* Páṇini's *Aṣṭādhyāyī* and Patañjali's *Mahābhāṣya* we find that both Vaiṣṇavism and Śaivism were in a flourishing condition in the Mauryan age. This finding is corroborated by the account of Megasthenes, but the Mauryan inscriptions have little to say on this subject. In the Buddhist *Aṅquttara Nikāya* (*c.* second century B.C.) and in the *mahāniddesa* and *Cullaniddesa* (*c.* first century

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B.C.), which evidently reflect that Mauryan religious phenomena, we come across religious sects such as Ājīvika, Nirgantha, Jaṭilaka, Parivrājaka, Aviruddhaka, Muṇḍa-śrāvaka, Māgandika, Traidaṇḍika and Devadharmika along with the cults of elephant, horse, cow, dog, crow, Vāsudeva, Balabhadra, Pūrṇabhadra, Yakṣa, Nāga, Asura, Gandharva, Mahārāja, Agni, Candra, Indra, Brahmā, Deva and Dik. We have already had the occasion to refer to the Ājīvikas, who received royal Patronage from Aśoka and his grandson Dasaratha. The Nirgranthas refer to the Jains. According to very late Jain tradition, Candragupta Maurya, in his last days, renounced the world and followed the Jain migration led by Bhadrabāhu to a place in Karnataka known as Sravana Belgola, where some local inscriptions still perpetuate the memory of Candragupta and Bhadrabāhu living together as saints. The hill where he lived is still known as Candragiri, and a temple erected by him as Candraguptabasti. It is said that Candragupta, in true Jain fashion, fasted unto death at this place. According to the Jain tradition, during the reign of Candragupta Maurya there was a great famine in Magadha as a result of which a large number of young Jain monks migrated towards the South under the leadership of Bhadrabāhu, the celebrated *gaṇadhara,* while the more elderly ones remained in Magadha under the leadership of Sthūlabhadra. It was during the leadership of the latter that some scriptual texts were compiled in a special assembly summoned at pāṭaliputra. The famine over, Bhadrabāhu returned with his followers, but he disapproved of the collection of canon made by Sthūlabhadra which led to a schism in the Jain church. That the Nirgranthas or Jains were patronised also by Aśoka is attested to by his inscriptions, though the *Divyāvadāna,* as we have referred to above, makes him a persecutor of the Jains. Among the successors of Aśoka the Jain texts treat Samprati as a patron of Jainism almost in the same light as the Buddhist texts treat Aśoka. According to Jinaprabha, he ruled at Pāṭaliputra as "lord of Bhārata with the three continents and was a great Arhanta to establish Vihāras for Śramaṇas even in non-Aryan countries."

Among other cults mentioned in the *Aṅguttara* and *Niddesa* lists, the Yakṣas, Gandharvas, Nāgas, etc., were non-Vedic deities of the masses commonly known as *vyantara-devatās.* Patañjali, commenting on Pāṇini (6.3.26) has divided the existing cults into *vaidika* and *laukika* categories. He has illustrated the first category with reference to Brahmā and Prajāpati and the second to Śiva and Vaiśravaṇa (Kubera, the lord of the Gandharvas and Yakṣas). The Yakṣas, Nāgas, etc., had received a special position in Buddhism and Jainism. Among the Yakṣas, besides Kubera, Pūrṇabhadra and Maṇibhadra were objects of extensive cults, and so also were the nāgas of which we have abundant archaeological evidence, belonging to first century B.C. The Jaṭilakas, Parivrājakas, Aviruddhakas, Muṇḍa-śrāvakas, Māgandikas, Traidaṇḍikas, etc., denote various ascetic sects whose views were most probably based on the teachings of the contemporaries of the Buddha and Mahāvīra. The Muṇḍa-śrāvakas were probably a Nirgantha sect, who are described in the Purāṇas as Muṇḍis and whose views are stated to be similar to those of the Jains.

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Some of these sects such as the Traidaṇḍikas, may be identified with the *ayaḥśūlikas* and *dāṇḍājinakas* of Pāṇini. The cult of the Mahārājas denotes the four Lokapālas or Dikpālas of the Caturmāhārājika heaven mentioned in the Buddhist literature. They were Kubera, the guardian deity of the North, Dhṛtarāṣṭra that of east, Viḍudabha the of that South and Virūpākṣa that of the West. The Vedic cults of Indra and Agni along with those of the Sun and the Moon are mentioned in *Niddesa* which proves that in the Mauryan age these cults did not become out of vogue. The list mentions the cults of Vāsudeva and Balabhadra, of which we have alreary had the occasion to refer. The latter was the same as *vyūha* Saṅkarṣaṇa, of the early Pañcarātra system whose cult does not seem extensive in terms of actual evidence. The *Niddesa* does not directly refer to Śiva, but there is mention of the cult of Deva, by which appellation Śiva or Maheśvara is frequently described.

Glimpses of the religious life of the Maurya period are found in the *Indika* of Megasthenes who happended to be the Greek ambassador to the court of Candragupta Maurya. Although this book is lost, many extracts from it are preserved in the quotations by the classical writers who regarded it as a standard authority on India. Megasthenes refers to two Indian deities under the Greek names Dionysus and Herakles, generally identified with Śiva and Kṛṣṇa respectively. Though this identication is accepted in the scholarly world, the present writer thinks that it is rather arbitrary. That is why what Megasthenes has said in regard to these two deities should be recorded faithfully. The account of Dionysus as preserved by Diodorus (3.63) is as follows : There were three persons known as Dionysus. The most ancient was Indos. He saw in India plenty of vineyards, extracted wine from the grapes and taught men how to prepare and use it, which is why he was also known as Lenaious, the god of wine-machine. He had another name Katapogon, that is, the god of beard which the Indians had the habit to grow. Dionysus travelled with his army throughout the world and taught people to prepare wine. For this, when he was no more in this mortal world, he was regarded as immortal by those who had been benefitted by him. Many towns in India bore his name in provincial languages. In Arrian's account *(Ind.7)* it is said that the Indians were originally nomads who did not know agriculture. They subsisted on fruits and flesh of animals. Then Dionysus came to India, became lord of the country, established cities and instituted laws. As in Greece, so among the Indians, he taught the use of wine and the methods of cultivation. He gave the people seeds to cultivate. When Demeter sent Triptolemus in different countries to teach the art of sowing, he did not come to India. No other Dionysus came to India before Triptolemus, so this Dionysus was the first to offer the Indians seeds for cultivation. He taught the use of the cattle-drawn plough, made the nomads settled agricultural peoples and gave them weapons for fighting. Blowing horns and beating drums the Indians worshipped the gods, specially Dionysus, because he taught them Satyric dances. He taught the Indians to grow long hairs, to wear turbans and to smear their bodies with fragrant substances. Polyaenus (1.1.1-3) held

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that when Dionysus invaded India, he fought with concealed weapons. He used to weaken the enemy by making them heavily drunk and initiating them to Bacchic orgies. During his war in India, in order to save his army from the excessive heat of the land, he occupied three mountian peaks among which the first was Korasibia, the second Kondaske and the third named after himself. These peaks contained streams, games, fruits and snow. After conquering India Dionysus invaded Baktria with the Indian army and the Amazons.

The following account is found in Strabo (15.1.6-8). Megasthenes and a few authors hold that the accounts of Dionysus and Herakles are trustworthy. But Eratosthenes and others consider them as imaginary. It is said that the city of Nyssa was established by Dionysus and that the Oxydrakai were his descendants. Because grapes grew in this land, people liked pomp and splendour. While marching for war or at other times the kings and their persons wore colourful dresses. The procession moved like the followers of Dionysus accompanied by the sound of drum-beating. When Alexander conquered the fort of Aornos, his officers in order to flatter him said that Herakles previously tried to conquer the fort three times, but he failed. The forefathers of the Sibai were with him. That is why the tribe wear skin like Herakles, carry mace and stamp its mark on cattle and horses. They refer to the Prometheus legend and hold that Prometheus was imprisoned in a cave at Paropanisos and Herakles came there to rescue him. Arrian *(Ind* 5.4-12*)*. says that there are stories in which Dionysus is supposed to have conquered India before Alexander, but such stories pertaining to Herakles are rare. The city of Nyssa, Mount Meros, the ivy-creepers, the colourful dresses and the drums and horns used in warfare are relics of Dionysus, compared to those of Herakles which are few and far between. That Herakles was defeated thrice to conquer Aornos is a false statement of the Macaedonians. Equally false is their statement that the Paropanisos is Mount Caucasus, from a cave of which the Titan Prometheus is said to have been rescued by Herakles. The Macaedonians hold that the animal-skin worn by the Sibai and the mark of mace which they print on their cattle are relics of the association of their ancestors with Herakles. Elsewhere Arrian *(Ind* 8*)* says that Herakles was really born in India, though according to the existing tradition he came from another country. This Herakles was worshipped specially by the Saurasenoi. They are an Indian tribe possessing two cities—Methora (Mathura) and Kleisobora (Kṛṣṇapura). The river Jobares (Yamunā) flows in their country. Megasthenes says that this Herakles wore dresses similar to those worn by the Thebian Herakles. Like the latter, he married many women and gave birth to numerous sons. He had only one daughter named Pandaia. She was given rulership of the country in which she was born, and as such the country also came to be known as Pandaia. She received from her father five hundred elephants, four thousand cavalry and thirty thousand infantry. Polyaenus (1.3.4) says that Herakles gave birth to a daughter named Pandaia. He gave her a coastal province on the southern ocean of India to rule. It had 365 villages, each of which paid her tribute on a particular day of the year.

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Arrian *(Ind* 11.1*)* says that the Sophistai, the learned persons or the Brāhmaṇas, though numerically small, enjoyed the highest privilege in the state. They had not to do any manual work or to pay tax. They performed sacrifices to the gods for the sake of the welfare of the state and also for individuals who employed them. They also acted as astrologers. If their forecasts repeatedly proved false, as a penance they were to observe a vow of silence for the rest of their life. Some of them travelled naked, lived in open space or under a tree and subsisted on roots and fruits. The same is said by Strabo (15.1.39-41) who calls them Philosophoi. He adds that on the new year's day they assembled before the royal palace, made various forecasts and offered suggestions to solve various problems. Elsewhere Strabo (15.1.58-60) tells that among the Philosophoi those who lived in the highlands were the worshippers of Dionysus and those who lived in the plains were the worshippers of Herakles. He says that Megasthenes had made another type of classification of them in two groups, Brachmanes (Brāhmaṇas) and Sarmanes (Śramaṇas). The former were more respected because their religious beliefs were consistent. Their children were given special spiritual training under efficient teachers. They lived a pure and disciplined life under beautiful natural surroundings. From the age of thirty seven they did not require to live a hard life, and since then they were allowed to marry more than one women and beget children on them. They did not impart spiritual knowledge to their wives. They concentrated their mind on the problems of death and life thereafter, on the constituents of the world. Their epistemology and eschatology resembled those of Plato. The Śramanas were known as Hylobioi or those who had renounced the world. They lived in the forests and subsisted on the forest produce. The abstained from drinking wine and sensual enjoyments. Occasionally the kings sought their advice by sending messengers to them. the Hylobioi of the second rank were the physicians who had great knowledge of human nature. They also lived a plain life. By their medicine they could make barren women bear children. They could determine the sex of the embryo. For curing diseases they insisted more on specialised diet than on medicine. Apart from these two classes there were astrologers, magicians and witch-doctors. Their religious and spiritual teachings were based upon popular superstitions. Their clients were mostly women.

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ASHOKA : PROMULGATOR OF BUDDHISM BEYOND THE SHORES OF INDIA

JAIKISHANDAS SADANI

Ashoka was the most remarkable king witnessed by history. He was a unique personality. His father Bindusara, appointed him as a Viceroy of Avanti when he was 18. Here Ashoka married Mahadevi who had Buddhist leaning. Mahinda and Sanghamitra were born from her. It is only after four years that he ascended the throne in 273 BC and ruled upto 236 BC. During the first thirteen years of his rule he carried out the traditional policy of expansion within India and developed friendly relations with foreign countries along with exchange of Ambassadors. V. Smith tells us "Ashoka's empire was the biggest and it extended from Afganistan, Hindukus, Baluchistan, Makrand, Sind and Kutch and Suvat valley adjoining with (tribal territories) Kashmir and Nepal, and the whole of India proper excepting Assam and as far south as the northern districts of Mysore and part districts of Madras. Ashoka also exercised jurisdiction in Khotan now in Chinese Turkistan. In the thirteenth year of his region he conquered Kalinga. The colossal loss of life in the war gave a severe shock to Ashoka. His own edict records "That is a matter of profound sorrow and regret to his sacred Majesty". This was a turning point in life of Ashoka and a great shift in the course of Indian history. Once and for all, the benign king gave up the conquest by *Digvijaya* and Imperial aggrandisement. He became a Buddhist and took up the spiritual path of winning over the hearts of entire mankind through love and compassion. Ashoka himself went to country tours to preach. He arranged for *Vihar-Yatras* and *Dharama-Yatras.* Ashoka directed his officers like Yuktas, Rajukas, Purushas and Pradeshikas to preach Buddhism. In Bhabru Edict Ashoka declares his faith in Buddha, Dharma and Sangha. Ashoka called Buddha as a *Bhagvata.* For maintaining integrity of the Sangh, he summoned third Buddhist Counsel. Having given up imperialistic idea of *Digvijaya,* he preached *Dhamma vijaya* with earnest zeal and dedication. Ashoka declared Buddhism the state religion and sent missionaries to other parts of India and abroad and westwards to Syria and Egypt. In the north, he sent missionaries to Kashmir, Tibet, Nepal, China, and Turkistan. In the south he sent missionaries to Ceylon and South Asian countries. He adopted monolith pillars and rock edicts for preaching the fundamental tenets of Buddhism : compassion,

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non-violence, friendship and selfless service of humanity, the world over. In other words the practice of Dharma. Ashoka has to his credit 84000 stupas, states the famous treatise *Mahavansha* (5/176 pg.41). Moreover, he built the renowned Sanchi stupa alongwith countless monastries. Through these he made efforts to establish the kingdom of righteousness, by practising and propagating the highest ethical values. Moreover, he got the texts of Buddha's preachings engraved on BHAVRN edicts and his own teachings on other edicts.

Such was Ashoka's zeal for propagation of Buddhism that he sent his son Mahinda and daughter Sanghamitra as apostles of peace for preaching Buddhism. Sanghamitra carried with her two saplings of Boddhi tree of Bodhagaya which was planted at Anuradhapura in Ceylon. King Devanam Priya-Tissa (247-207 BC) was ruling Ceylon. He was so convinced that he become a Buddhist and made Buddhism the state religion. In the 5th century AD Fa-Hsien visited Ceylon. The *Mahavansha* chronicle gives a lot of information about Buddhism in Ceylon. Building of *stupas* was one of the effective mode of preaching Buddhism. The earliest surviving stupas or pagodas were build in 2nd or 3rd century BC. The *Mahang Stupa* was repaired in 1100 AD. The Yellethela Dagbas of 3rd or 2nd century BC were repaired in 1883 AD.

The famous King Duttha Gamani built two large *dagbas* or *stupas* at Anuradhapura. One of them Ruanweli is of great importance and was completed by his successor in 77-59 BC. *Mahavansha* gives a graphic description of the relic chamber of this stupa. The Bodh Vihar Dagba built by Mahasena (277-304 AD) is the greatest *stupa* in Ceylon. Another important and effective means of preaching Buddhism was by building monastries, huge Buddha-Images and paintings of *Jataka-Kathas*.

The *Parinirvana* image of Buddha is over 46 feet in length and near it is the image of Ananda which is 23 feet high. *Jetvana* monastery also has a huge statue of Buddha and the remains of frescos on ceilings are still visible. Another colossal standing image of Buddha (12th century AD) is seen at Seseruwas. It is 16' 2" and another at Awakana is 46' high. An unordained Buddhist priest worked on for preaching Buddhism executed admirable paintings in Ridi Vihars. A few illustrated manuscripts of late 18th and 19th century AD are available in paper. It is from Ceylon that missionaries went out to other South Asian countries for preaching Buddhism.

BURMA

Burma had established contact with India both by land and sea. In the 1st century AD Tagaung and old Prome on sea coast, were closely attached to India and India's Buddhist influence is vividly visible. From 5th century AD onwards Prome and Thatan became important centres for Buddhist and Hindu culture. The oldest source of Buddhism, in the Sanskrit inscription, was of Mahayana. In Thaton the inscriptions are in Pali, in the south

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Indian alphabet, preaching Hinayana. The Saka Era was in use. Burmese era was established in 639 AD. The great Buddhaghosh visited Thaton about 450 AD bringing with him books of Pali canon. From this time onwards Burma became an exclusively Buddhist country. In northern Burma, however, the Buddhism bears an imprint of Nepal and Tibet. It is, therefore, Tantric in nature. In the 8th century AD there was close contact between Tibet and Burma and a few pedal temples and *stupas* built in this period have survived. They resemble the *stupas* at Sarnath. The unification of Burma was accomplished by Anawrata (Annirudha) at Pagan (1040AD-1077AD). Anawrata conquered Thalon and brought back with the Talaing King (Manuha) Hinayana books and priests to Pagan. He, thereby, drove away the tantric art and obtained the relics, and built pagodas. More than 5000 pagodas can be traced near Pagan. Pagodas with their exuberant art-works became the most effective centres in propagating Buddhism.

Moreover, classical Buddhism is best popularised by presenting the 81 relics of Anand Pagoda. Several Pagodas represent life of Buddha according to *Bidura, Bedan* and *Lalitavistara* treatises. They contain beautiful frescos of *Jataka-Kathas* and separate figures of Buddhas and Bodhistavas are found in large scale. Besides it received Buddhist culture through Assam and Manipur rather than South India. The traditional buildings of *stupas* and pagodas, huge statues of Buddha flourished in the western part of the town. The *Parinirvana* image of Buddha is 181′ long. Moreover, Burmese employed very effective means of preaching Buddhism by dance, dramas, puppet-shows, depicting *Jataka-Kathas* at temple-fares and domestic celebrations, honouring their fore fathers. Buddhist tradition continues in Burma till to-day.

CAMPA

Campa is the land of Cams ; Indo-Camp civilisation, during the period around 1000AD years is found on the eastern coast of Indo-Chinese peninsula. Before the beginning of Christian era, the country was under Chinese rule which prodominated till 14th century AD. There is an important inscription of Indravarman dated 875AD extolling the virtues of Sambhu Bhadreshwara. The same king founded the Buddhist shrine in honour of Lokeshwara about 900AD. This is the only Buddhist sighte in Campa. The standing bronze statue of Buddha is of Indian Simhalese origin of the 3rd or 4th century AD. In Campa there are seen the last remnants of Hinayana period. Thereafter, Buddhism received a serious set back. It could not withstand attack of Kublai.

SUMATRA

Sumatra received Indians much before the beginning of Christian era. Sumatra is the land of Gold or *Suvarna Dwipa* or *Suvarna Bhumi*. It is already referred to in *Jatakas*

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and in *Ramayana* by these names *"Yuvadwipa-Swarna Mandita"*. Mahavansha tells us that Ashokan missionaries reached "Suvarnabhumi" (Ch.XI.444). Fa-Hsien visited Sumatra in 414 AD but found very few Buddhists. A few years later Prince Gunavarman of Kashmir landed in *Yuvadwipa* (Java). He first converted the Queen and she in turn her son to Mahyana Buddhism. Thus Buddhism become the official royal religion. At that time Sumatra was known to Chinese as Cho-Po=Vijaya=Sri Vijaya later known as Palem Bang. It was ruled by Saitendra dynasty. It Ching who visited Sumatra (690AD) states that old Malayu was subject to Sri Vijaya. He studied Sanskrit language, the old Malaya language and Buddhist texts and commentries. Thus there existed Buddhist culture. Palam-bang being an important port between India and China according free exchange of cultural affinities. In 778AD Sri Vijaya honoured Vajrapani and Padmapani and Buddha by erecting *stupas*. This was done by King's chaplin Jayanta and his disciples. At Nalanda a copper plate shows that King Devapala built monastries. The King Chudamani Varman supported Buddhist Temples at Nagapattam. In 1084 AD, Kullotungacola dedicated a village to the Buddhist temple. In the 11th century AD the famous Indian monk Atisha spent ten years in Sumatra preaching and studying Sarvastiwadin Buddhist doctrine. By the end of 18th century AD Buddhists and Hindus were ruled by Muslim Sultans.

SIAM

Siam-Tibetan-Lao-Thais were the ancestors of modern Siam. The early Thai Capital was established at Lamphun around 575AD. From the combination of Lao-Thal-Khamer races, developed a powerful kingdom of Sukhotai-Sawarnkloke (Twin capitals are also called-Sukhodaya-Sajjanalaya). Here was a fusion of Brahmanical and Buddhist culture. By the 10th and 11th AD century Indo-Thai culture effectively emerged and asserted itself as found in the descriptions in Khumer language and continued till the end of 10th century. In these Thai remains, we see the unbroken continuity of the Buddhist tradition. The Buddha-heads are similar to the classic Thai period and the earlier ones from Pit Suanlok dated 1000AD. The most famous works of the Sukhotai period are the *Jataka-Kathas* in pali canon and engravings of Wat Sijiam along with identical inscriptions (1357AD-1361AD). Mahadhasmaharajadhiraja's long inscription of 1361 AD states that a learned Buddhist priest Sangharaja came by invitation from Ceylon to Sukhotan. He was received with great honour. Temples were built in the mango garden west of Sukhodaya. These engravings must have been executed after the completion of the temple-building.

The Saimese paintings are mainly on illustrated manuscripts, on temple walls and banners with the figures of Buddha and Jataka-frescos in the late Ajanta style. The Siamese drama has close resemblance with Indian dramatics. It has close bearings with Bharata's

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Natya Shastra. More over shadow plays, Nau of Talang were also popular means preaching of Buddhism and other mythological themes.

CAMBODIA

The Khmers, Non-Khmers or Kambujas *(Cambodia)* are of Sino-Tibetan origin. Most of our information in this regard, about the early period is derived from Chinese sources. We are told an Indian Brahmin Kaudinya (1st century AD) landed in Funan from a merchant vessel. He married the Princess who had received the name Soma and thus became master of the land. This story is stated in Cam inscription of 659 AD where the princess is called Nagini. There is a race or cult called Naga in India. The bilingual inscription reveals the Vedic and Puranic epics written in Sanskrit with magnificent letterings, similar to the ones found in India. Buddhist influence predominated in fifth century AD and Brahmanical in 6th or 7th century AD. But this had never been exclusive. In the old capital of Vejadhapur survive the remains of numerous shrines of 6th or 7th century AD. Hanchi near Sambour has a four armed statue of *Anantashayin Vishnu.* So also is a Beyang tower dedicated to *Hari-Hara.* Similarly during the fifth or early sixth century AD there is a standing figure of Buddha from Romlok with complete transparency of drapery. This is reminicent of Rock-cut Buddha image of Ajanta and to some extent of Sarnath. A fine head of Buddha showing Chinese affinities shows how Buddhism had reached S. China in the time of six dynasties.

Similarly the standing figure of Lokeshwara (Avilokiteshwara) from Rachgia has close affinity with Avilokiteshwara of Canary Caves. It reflects the similar religious fervour in India and Cambodia. Cambodia represents a fusion of Hinduism and Buddhism par excellence. The Buddhist and Brahmanical rites were so assimilated that the priest Devraja could officate in both rituals. In a temple constructed by Suryadaman the Buddhist and Shiva images have inscription both extolling their ascetic aspects. Shiva and Buddha as Mahayogis have become indistinguishable. Hinduism accepted Buddha as one among the ten incarnations of Vishnu. Buddha and Vishnu became synonymous. The great Jayadeva of '*Geet Govinda*' in his Dashavatar stotra describes Buddha as an avatar of Vishnu.

JAVA

The earliest impact of Indian civilisation dates back to the beginning of Christian era. In the fourth and fifth century AD we come across Sanskrit inscriptions in Pallava script. Till mid 8th century AD Shaivism and Shaiva temples are predominant. But by that time there was a harmony of Shaiva and Buddhist cults. Early traces of Hinayana Buddhism are not much perceptible but Mahayana become a popular religion. It was, however, tantric in nature with close affinity to the one preached in Nepal. Buddhism and Hinduism became

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so intertwined that Kretangara received the name Shiva-Buddha. Actually in Java Hinduism and Buddhism became integrated and inseparable just as it was then in India also. During Shailendra period Buddhism became popular and the first monument is dedicated to Tara. Moreover Buddhism was wide spread with monastries, shrines and outstanding temples with lavish decorations.

The great temple of Borobudur situated in the Kedu plain is unique in itself. It has 72 *stupas* surrounding it, in three concentric circles. The preambulatory gallery walls depict life of Buddha as described in the great literary sacred text *Lalitvistara* and stories from *Divyananda Jatakmala.* Coomarswamy says "Borobudur is like a ripe fruit matured in breathless air".

Prince Gunavarman of Kashmir travelled from Sumatra, Java to China as a Buddhist missionary, preaching Mahayana Buddhism. Central-Java has source of small Buddhist and Tantric Buddhist metal images, and in 860-915AD Hindu Candi Asu and Buddhist Candi Plaoson. Moreover in the Prambanam group of temples more than 30 temples of different periods and types enshrine both Buddha and Shiva images. One significant beauty of religious harmony of Javanese is that in Candi Jago relics we have Krishnayana depicted in Buddhist temple and in Candi Jau enshrining a Shiva image, has a Buddha image above it. This indeed is a supreme example of religious sychronism. The scroll and manuscripts are illustrated in a style reminiscent of Ajanta paintings of Buddhist monks. They depict epics and *Jatakas Kathas*. In Bali we still have the amalgam of Hinduism and Buddhism practised with great zeal and religious fervour. From Java the Buddhist missionaries and pilgrims continued to proceed to China on their forward visit to China, Korea and Japan. They met other missionaries who came by land route as well.

NALANDA UNIVERSITY

Nalanda University was a very important centre of Buddhism in which over 3000 resident students were well settled. It had close relations with Sumatra and Java in the 9th century AD. Reference is made to an important monastry built by Balaputra of Suwarnadwipa in 860AD.

Traces have been found in Nepal. Burma too had close connections with Nalanda. General analysis of all the finds at Nalanda reveal Mahayana which extended upto Burma, Sumatra, Java and beyond the seas. Impact of Nalanda pattern is visible in Sumatra and Java. Moreover Fa-Hsien, Hsuan Tsang and I Ching the Chinese pilgrims have given a very detailed description of the beauty and planning with which the institution was built. Unfortunately, due to political decadence of Magadha the monastries alongwith Nalanda were destroyed by muslims and the rich library of manuscripts was burnt to ashes. Thanks

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to the untiring labour of the Chinese pilgrims some of the outstanding Buddhist books are available in the Chinese language and some of them have been translated into English. Yet whatever survives of Nalanda gives us an insight of its greatness as a intellectual and spiritual centre of the Buddhists. It is from here that the missionaries were inspired to forge ahead and move into other countries for the propagation and preaching of Buddhism by land routes as well.

KASHMIR

Kashmir formed the part of the dominion of Ashoka earlier to Kanishka and Huvishka. By the time of Harsha it was an independent power controlling Takshila, Sind, Punjab and Himalayas. Prince Gunavarman (431AD) was a devout Buddhist. He resolved to propagate and preach Buddhism in far of lands. As a Buddhist missionary, he travelled to Burma, Sumatra and China and other countries in between. Other important rulers of Kashmir also followed suit. Lalitaditya in 730 AD received investiture from emperor of China. Awantiburman (855-883AD) was not only a patron of literature but also a great builder of shrines. Kashmir thus became a seat of Buddhist learning in the olden days.

The old Capital of Panderenthan (Puranadhisthana) near Srinagar had yeilded very significant sculptures of Buddha and Awalokiteshwara. There are beautiful Buddhist temples between Srinagar and Baramula whose impact can be seen in Borobudur temples of Sumatra. Kashmir was the famous Buddhist centre in the north.

NEPAL

Nepal is situated in the isolated Himalayan valley in close vicinity of Tibet from where people found their way to China. Chinese authors in the 9th century AD speak admirably of Nepal. Moreover, since Nepal is the birth place of Buddha it has its own importance for Buddhism. Four *stupas* at patan are of great antiquity as they are according to the tradition of Ashoka. These *stupas* are still intact. The similar characteristic are observed in the development of Pagodas, seen in the far east. In the middle ages, however, the Tantric pantheon in Buddhism became popular in Nepal. In the 11th century AD the Indian princess from Tirhut controlled the Kashmir valley and she zealously took up the propagation of Buddhism from Nepal to Burma and Indo-China. Needless to add, the Buddhist tradition from Nepal entered Tibet and it is specifically seen in the Lamaistic development.

TIBET

The first king of Tibet, was also the maker of the nation, married a Nepalese Princess in 630 AD. She was given place in the Tibetan pantheon as an incarnation of Goddess

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Tara. The same prince also married the daughter of the T'ang emperor T'ai Tsong. She was a Buddhist and was deified in the same way. Lying on the highway to China, Nepal and Tibet opened the land route from India to China. In the 6th century AD the DalaiLama took up the place of the Tibetan King on the Mar-po-ri (Lhasa) as his residence.

He thus became the head of the Tibetan Church and is regarded as incarnation of *Awalokiteshwara.* During this period Buddhism was at its highest acme. The mongols received religion and a new script from Nepal. Ani-Ko worked for the Tibetan Kings and on his way to the court of Kubalai Khan bestowed various honours on the Lamaistic priest from Tibet, and carried the message of Buddha to China and Mongolia.

CHINA TURKISTAN

Hsuan Tsang asserts occupation of Khotan by Indian immigrants. The ruling class of Khotan was of Indian origin. The influence of Buddhism is evident in the principal remains of *stupas* and monastries. Its, popularity of Buddhism can be noticed in the two ruined temples at Miran, specially their forms and also their preserved frescos.

Moreover, the domed circular shrine containing the solid *stupa,* the constructional examples of a rock - cut form known in India only, confirms the Buddhist religious influence. The inner wall of the same shrine is decorated with frescos and dado which illustrates the familar *Vessantara Jataka.* Lalitaditya 733 AD and another king in the 8th century AD received investiture from the emperor of China. Lalitaditya founded the capital Parihaspura and constructed a magnificent temple. This tradition continued till the later half of the 9th century AD. Thereafter, the Buddhist capital suffered a set back due to muslim invasions.

FAR EAST

The Indian influences which extended to China and Japan was essentially of Buddhism. Its impact is evident in art, literature, drama and other aspects of social life. It was established by direct and indirect routes ; over land through Khotan and by sea the southern sea routes through Cambodia and Campa. Besides the settlement of priests and traders at Loyang,there was no social or political domination. It was the inner emotional working of Indian thoughts and religion specially Buddhism that laid its imprint among the people.

The Chinese contact with Buddhism was made first in 65 AD or probably earlier. Between 357 and 571AD more than ten Indian embassies were sent to China. The priest Kumargiva (383AD) and Prince Gunavarman of Kashmir preached Buddhism and is said to have painted *Jataka* scenes in Canton. He zealously dedicated his life for Buddhism and died in Nankin (431AD).

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There are not many tangible evidences of influences of Buddhism in China before 5th century AD. From the period of the 6th Dynasty, south China shows Buddhist influence. More over art in Northern Wei dynasty is highly original. Chinese art reflects Indian religion also. In the cosmopolitan town Loyang considerable number of merchants and priests resided and with active development from 6th century AD onwards the trade route across Central Asia established closer ties with India and its Western land. Fa-Hsien was the first chinese pilgrim who reached India in 399AD, Sung Yun 328AD, Hsuan Tsang travelled India extensively between 630-644AD. While returning he took home 150 particles of Buddha's bodily-relics, various images of Buddha in silver and gold and sandalwood, 657 volumes of manuscripts and devoted rest of his life to translation. I Ching travelled in India and returned to China *via* Indonesia (671-695AD). In the contrary direction Gunavarman of Kashmir (431AD) Bodhi Dhama of S. India (529-536AD) and Paramartha of Magadha 545AD reached China and preached doctrines of Buddhism and various Mahayana forms. In the 8th century AD China had direct political relations with Kashmir. The impact of Buddhism and late Hellenism continued crossing and inter crossing in the Chinese idioms of the Six Dynasties. In the T'ang period Buddhism flourished. We see its influences in paintings and sculptures as well.

In the mean time, Buddhism extended westward and Tibetan Lamaism was spreading though Mongolia and China carrying the ritualistic mysteries. This is also reflected in Lamaistic art spreading from Nepal through Tibet and China with local variation of ethnic conditions.

KOREA AND JAPAN

Art was the sojourner of Buddhism. It inspired the thought and living of the people. Art laid its concrete impact reflected in the temples and places of worship. From China Buddhism passed on to Korea and through the energy of Shotokin to Japan during the Swiho period in the Yamato valley (645 A.D.) Japanese culture and unity were developed in the 7th century under Chinese influence. Buddhism and Buddhist art and learning, though coming from the most part indirectly through Korea brought Japan for the first time into contact with the outer world, with India, as Okakura points out. Coomaraswami observes "It was not merely the doctrine of Buddha as an individual but the whole new thought that affected Japanese life." Rudyard kipling who thought "East is East and West is West and never the twain shall meet" ultimately found their harmony and was enamoured by Buddha when he beheld the Japanese image of Buddha at Kamakura. He says :

And whose will, from pride released,
contemning neither creed nor priest,
May feel the soul of all the East
About him at Kamakura.

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This influence continued and predominanted Hakuto and Naua period of Japan. Adequate understanding of Buddhist thought reached Japan by pilgrims and ambassadors, successors of Shotokin Taishi who came in contact with Indian art and the west Khotan. Japanese were fascinated with Indian thought and art. The paintings Horyuji and Ajanta have very close similarity. The art and religious thoughts in Japan bear testimony of the Shinto pantheon. The Japanese Tri is similar to the Indian Toran.

BUDDHIST IMPACT ON THE WEST

Ashoka preached and propagated Buddhism in west also. The existence of Buddhism on the border land of Persia is confirmed by the ruins of the Buddhist monastary is Seistan, Chinese writer tells us that Buddhism had strong hold in Parthia. In 2nd century AD the Parthian prince gave up the throne and became a Buddhist monk. Alberuni tells us, in former times Khoresan, Persia, lraq and Monsul and the countries upto Syria were mostly Buddhists. There are many traces of Buddhism in the Manichean religion which was preached during the 3rd century AD. A book written in the form of Buddhist Sutras speaks of the founder Mani as another Tathagat, mentions about Buddha and the Bodhisattva.

Zenab tells us that on the upper Euphrates, Indians had built two temples enshrining gods in 2nd century BC. When Gregory tried to destroy them in 304AD, he was opposed by the people. When Christianity made its appearance, Indian culture and Buddhism were already there. Zenab tells us that many of the rituals of Christianity such as celebacy of the clergy, putting right hand on the head of the follower for the blessing, long flowing robes, separate living from the worldly life are the results of Christianity coming in the contact with the Buddhist monks. While the Greeks erected pillars inscribing their victory, Emperor Ashoka built the pillars for preaching the message of Buddha.

References of India, have come in Russian literature from Greece and Persia. But in the 12th century AD, a legendary biography of Buddha is introduced in the classic "Romance of Barlaam and Joasaph." The word Joasaph comes from Indian word Bodhisattva.

Buddha was quite well known in Central Asia in the 1st century AD. He was popular amongst the Maecheans in the middle of the first millenium. Moreover, the story of 'Romance' was known in Pehelvi in the 6th and 7th century AD. "Thus one of the finest example of Russian religious verse goes back to the legend of Buddha", says G. Bongard-Levin. Moreover, excavations on different sites have brought many Buddha images to the fore.

As we survey the spread of Buddhism throughout the continent of Asia and Europe and other parts of the world, we are reminded of the great King Ashoka who gave up *Digvijaya* and opted for Dharama Vijaya the victory of love and compassion over the life

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of violence and pride. The sapling of the love which was planted by his children in Ceylon has grown up to give soothing shade to the hearts torn with envy and hatred. It gives a balmy touch of fraternity to all mankind. Socrates dreamed the ideal king to be a philosopher. Ashoka is the true embodiment of such an ideal. The empire built by him with the sword crumbled within fifty years while that of the sapling has continued for 2300 years and will continue for millenniums to follow. I conclude, with the observation of the Historian Litterateur H.G. Wells : "Amidst the tens and thousands of names of monarchs that crowd the columns of history, their majesty's graciousness and serenities and royal highness and the like, the name of Ashoka shines alone almost as a star. From the Volga to Japan, his name is still honoured. China, Tibet and even India, though it has left his doctrine, preserve the tradition of his greatness. More living men cherish his memory today than have heard the names of Constantine of Charlemagne".

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SCIENCE AND TECHNOLOGY IN INDIA DURING THE MAURYAN ERA

ARUN KUMAR BISWAS

ABSTRACT

We have attempted to present a tentative review of science and technology—specially the material technologies—duing the Mauryan Era. The related topics which have also been discussed in this article, are the socio-economic factors of both kinds—conducive as well as detrimental to the growth of S & T—and philosophy of science during the said historical period.

INTRODUCTION

The author of this treatise being a scientist and not an Indologist, his treatment of the historical subject must be viewed as a tentative one. History of science and technology (S & T) is a borderline subject often shunned by historians as well as scientists. The author has not come across any dissertation on this specific topic although he has been considerably benefitted from the available source materials.[1-21]

Uncertainty and confusion regarding dates bedevil any effort to systematize Indian history. The Mauryan epoch is the earliest period in Indian history for which we are reasonably certain about dates. Yet, the artefacts claimed to be 'Mauryan' are not always accurately dated and doubts persist as to whether these are pre-or post-Mauryan in age.

Tentatively, we may ascribe the following dates : Candragupta's reign (324-300 B.C.), Bindusara (300-273 B.C.), after four years interregnum Asoka's reign during 269 to 236 B.C. and the dynasty ending in 187 B.C. Thus the Mauryan rule lasted for 137 years, approximately from late 4th century to early 2nd century betore Christ.

The 'ancient' period in Indian history covers 4-5 millennia in which one and a half century is indeed a small fraction of time and the moot question is to what extent can the Mauryan era claim credit for the S & T which existed at that time. It is quite possible that many or at least some of the trends and innovations had started earlier, although we have neither written record nor material evidence thereof. We may therefore consider whether the earlier trends were sharply focussed and consolidated during this era, and new trends were initiated and propagated through the successive era. It may be proposed therefore,

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that the present article may be considered with a slightly wider span of time in perspective ; an alternative title such as Indian S & T during 4th-2nd centuries B.C. could have been suggested for this article.

In view of some of the later-day interpolations which have crept in *Kautiliya Arthaśāstra,* some scholars such as J Jolly, T Trautman have viewed the text as a post-Christian era writing. Most scholars 1,3,10-12 however, disagree with the notion. The *Arthaśāstra* is most probably a late 4th century B.C. text and can be safely used as a source for the Mauryan period. Some of the justifications underlying our view may be briefly mentioned. Many of the state measures and Pali technical terms mentioned in the Aśokan edicts tally with the Sanskrit text and words in the *Arthaśāstra.* At least two pre-Christian era texts, the Smriti's of Manu and Yājñavalkya reproduced extracts from the *Arthaśāstra. Ājīvikas,* mentioned in the *Arthaśāstra* (3.20.16), the Lokāyata philosophy (1.2.10) and several oligarchies (11.1.4-5) disappeared from India after the third century B.C. Tin was mentioned as *trapu* and not later-day *vanga,* brass as *ārakūṭa* and not *pītatāla.* The *Arthaśāstra* describes the tradition of punch marked coin (2.12.24 ; 4.4.20) and not the later-day tradition of casting coins. *Vaidūrya* or beryl was mentioned but not *marakata* or emerald which used to be imported later, only when the Indo-Roman trade started. The present author has been the first[13] to put forth the *vaidūrya-marakata* argument in favour of the early antiquity of the *Arthaśāstra.* We have pointed out that the kind of post-Christian era insertions that we find in the *Mahābhārata* mentioning *marakata* gem (3.213.13 ; 12.46.33) and the trade with Rome (2.28.49-50) are absent in the *Arthaśāstra.* There were minor (but significant) later-day interpolations which we would refer to later.

We may now terminate our introductory remarks indicating a structure in organising this paper. *Firstly,* we would like to deliberate on the nexus between the growth of urbanisation, science and technology with special reference to the Mauryan period. Agricultural surplus being crucial to the process of urbanisation, the *second* part of discussion would naturally be related to flora and fauna, the plant resources, irrigation, forestry, wood, textiles, medicinal plants etc. in the Mauryan period. *Thirdly,* we would deliberate on clay-related products such as potteries, brick, terracotta, etc ; *fourthly,* on rocks, stones, sculpture, architecture and abrasives—a special Mauryan advancement on arts and crafts in India. The next few sections would be related to :

v. Reh, Glass and Non-gem minerals
vi. Metalliferous Ores, Mines and Gems
vii. Metals, Alloys, Coins
viii. Socio-Economic Factors
ix. Philosophy of Science During the Mauryan Era
x. Concluding Remarks

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URBANISATION, SCIENCE & TECHNOLOGY

The present author has made a detailed study on this subject which has been reported elsewhere.[22] Special reference was made to the 'ten criteria for urban revolution' tentatively suggested by Gordon Childe.[23] Agricultural surplus was cited as an important criterion. He mentioned that one trait of urban revolution is the creation of 'exact and predictive sciences' such as arithmetic, geometry and astronomy. He could have included material technology (not science) also as one of the traits of early urbanization.

Gordon Childe's analysis evokes many subsidiary questions. Why does the agricultural surplus not always lead to the formation of cities and S & T, and how did some ancient cities like Mathura prosper without any agricultural surplus in the immediate neighbourhood? It appears that a critical measure of trade, cultural and even military contacts with neighbouring state provide vital stimuli to the growth of civilizations, cities and technologies. This factor has been overlooked by many scholars including Childe.

The phenomenon of the second urbanization in India (beginning in the early part of the first millennium B.C) was not totally dissimilar to the first (Harappan) urbanization. The emergence of the Iron Age was of course a new phenomenon. R.S. Sharma suggested that the discovery of iron resulted in speedy clearance of forest, more extensive cultivation through the use of iron ploughshare, accummulation of large agricultural surplus and formation of city-states.[24] His model has been however criticised on many counts.

Since the discovery and first use of wrought iron (12th Century B.C.), Indians had to wait many centuries for preparing carburised iron, gaining access to better iron are deposits in Bihar, learning the heat-hardening techniques and fabricating specialized equipments such as iron ploughshares, armouries which became popular only around 4th/3rd century B.C. Earlier than this period forests were cleared more by fire and less by the iron implements.

We propose that the emergence of the new technologies and the Iron Age was only one amongst many factors underlying the second urbanization. Besides, this was a cyclic relationship, urbanization further promoting iron technology. Was there a deeper cause promoting both?

In his analysis, A. Ghosh accorded priority to the factor of social & political demand for generating agricultural surplus rather than the capacity to produce the surplus as a result of technological innovation.[25] His argument was in favour of the greater role of a 'power structure' without which a surplus could not appear the moment it is asked for.[26] The megalithic culture in the Peninsular India for example, produced iron and agricultural surplus, but this led to neither an urban tradition nor any spurt in S & T.

We may now go deeper into this problem. What causes the emergence of a 'power structure' articulating 'socio-political needs'? Basically, it is a psychological drive against

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complacency, actuated by a desire to resist external aggression, to promote national unity and to consolidate the existing resources and distribution mechanism by centralisation ; it is also promoted by an expansionist urge to meet shortage of resources by trade or conquest, and even cultural expansionism *viz,* to propagate one brand of religion or culture.

This is precisely what happened during the advent of the Mauryan age. Centuries earlier, the *janapada* tradition had led to the institution of sixteen *mahājanapadas* which often came into conflict with each other. The Persian onslaught on Takshashila or Taxila during the time of Gautama Buddha resulted in some national cohesion, and warrior-kings like Pradyot of Ujjaini rushed to Taxila for national defence. One and half century later, the process culminated with the Greek onslaught and the emergence of Kautilya and Candragupta, the former teaching the latter how to consolidate the empire with science, technology, commercial management and statecraft. State management, urbanization and technology continued to activate each other in a cyclic fashion.

PLANT RESOURCES AND RELATED TOPICS

Agricultural surplus has been known to be a necessary (though not a sufficient) condition for urbanisation. It is doubtful whether the knowledge of botanical science during the first (Harappan) urbanisation in India was as extensive as during the second.

By the time of Kautilya (end of 4th century B.C.) the knowledge regarding plants was recognised as a separate branch of science. There is no reference to the word *vṛkṣāyurveda* or the science of plant-life in any Indian literature proir to Kautilya's *Arthas'āstra.* The subject was extensively developed much later in the *vṛkṣāyurveda* texts of Surapāla, Parāśara etc.

Kautilya's text mentions *Sītādhyakṣa* or the superintendent of agriculture who should know the science of agriculture and that of the plant kingdom[27] or be assisted by persons knowing the science : *Kṛṣitantra-gulma-vṛkṣāyurvedajñaḥ.*

Kautilya classified the plants under four categories—trees, creepers, shrubs and herbs. A few centuries later Manu provided a more detailed classification into eight classes : *Oṣadhi* (bearing fruits and flowers), *vanaspati* (fruit without visible flower), *vṛkṣa* (only fruit or only flower), *guccha* (herb), *gulma* (succulent shrub), *tṛṇa* (grass), *pratāna* (creeper spreading on the ground) and *valli* (creeper climbing a tree). Evidently Kautilya was the path-finder in the art of systematic classification of plants. He classified fruits and vegetables into four groups, namely astringent, acid, pungent and edible.

Taxila or Takṣaśilā was an important centre for education in medical and plant sciences which were related. Caraka had proposed that plants have life, consciousness and sexes. There was even reverence for this category of life. Nurturing medicinal plants was considered

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to be an eminent way of helping the plant to help man and animal. Certain plant diseases such as blight and mildew were known to the ancient Indian as early as the Mauryan age.[17] The *Jātaka* stories abundantly reveal practical concern and knowledge about the growth of plants. The grafting technique was known. A sweet mango tree could be made to contact with a *nimba* tree and produce bitter fruits. The *Arthaśāstra* (2. 24. 24-25) mentioned a kind of manure, prepared from fish.

The Mauryan cities required developed hinterlands, sufficiently rich in cereals, fruits, vegetables, timber and cotton. The cities had to be beautified with gardens and groves. These requirements helped in the growth of forestry, horticulture, gardening and the science of plants. Many plant products which were well-known later during the Graeco-Roman era, came to be developed during the Mauryan age as items of export trade form India. Some of these may be mentioned : cereals, cotton, muslin, medicinal herbs, pepper, ginger, cardamom, plant-products used for dyeing (such as indigo), perfuming and cooking, timber specially teak wood, useful for building ships and palaces, black wood (ebony) and sandalwood, useful for making furnitures and ornamental articles etc.

Cultivation of cotton was quite widespread. Guilds of textile workers were prominent during the Mauryan period. The *Arthaśāstra* mentioned places such as Madhurā, Aparānta, Kalinga, Kāśī, Vaṅga, Vatsa and Mahiṣa specialising in certain fabrics. Cotton manufactured at Aparānta was exported from Broach to the West.

Dukūla, a white soft textile, *kṣauma,* a type of linen and woolen blankets were common commodities. *Arthaśātra* suggsted (2.33) that women of all ages particularly widows, deformed women etc. could be gainfully employed in weaving. The wages of the weaver depended on whether the threads were spun fine, coarse, or of middle quality, and in proportion to the quantity woven (2.13). *Arthaśāstra* mentioned *cīnapaṭṭa* which was probably Chinese silk imported from the province of Szechuan.

The Mauryan state took up the twin causes of developing plant resources and irrigation in right earnest. While planting trees, measures were adopted to excavate tanks, wells and lakes. Irrigation was handled by the office of *rājūkas* (or the *agoranomoi* of Megasthenes) who inspected the rivers and sluices and supervised the distribution of water among the cultivators.

The Junagadh inscription of Rudradāman I of about the year 72 (*i.e.* A.D. 149-50) records[28] the creation of a lake called Sudarśana by constructing an earthen dam joining the spurs of the mountain called Urjayat (and of the Raivataka mountain opposite Urjayat) near Girinagara to stem the flow of the Suvarnasikatā, Palāśinī and other streams from the mount Urjayat. Girinagara is now called Girnar, one mile to the east of Junagadh. The dam was constructed under the order of Vaishya Pushyagupta, the provincial governor of

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Candragupta Maurya (*c.* 324-300 B.C). During the period of Aśoka, the Maurya, Yanarāja Tushāspha, the regional governor, adorned the dam with conducts *(praṇālī),* (probably to get the excessive water out for irrigation and also for protecting the dam from heavy pressure of water).

Rudradāman's inscription also records that the dam burst in 149-50 A.D. due to excessive rain and Rudradāman got it repaired and made 'three times stronger' (Epigraphia Indica, Vol. VIII, pp. 42f). A similar incident occurred and the dam was again repaired during 455-56 A.D in Skandagupta's reign (J.F. Fleet, *Corpus Inscriptionum Indicarum,* Vol III, Calcutta, 1888, pp. 58f). Thus the two epigraphs record the history of Lake Sudarśana for over 750 years starting from Candragupta Maurya's reign.

Agoranomoi or the market commissioners were also concerned with construction and maintenance of roads, erection of distance-marking sign-posts. Aśoka's 7th Pillar Edict stated that wells should be dug at every eight *(aḍḍha* probably stands for *aṣṭa* and not *ardha) kos* which is a distance of about nine miles. His 2nd Rock Edict recommends certain social welfare measures such as construction of roads supplied with wells and lined with shady trees, the planting of medicinal herbs and organization of medical centres for men and animals.

Kautilya regarded forests to be a significant source of income of the state. Three kinds of forests were described : game-forests, timber forests and elephant forests. The timber forests were of great commercial value : these had to be properly maintained and conserved. Kautilya recommended that new forests should be set up. Urban civilization demanded large scale use of timber wood for a variety of purposes : construction of palaces, monumental buildings, bridges, boats, ships, chariots, war materials etc. Kautilya recommended that for optimum exploitation of forest-produce, the state should appoint superintendents, 'tested and found pure in all kinds of allurement'.

During the Mauryan period large quantities of wood were used for various purposes. There were extensive wooden palisades in Pataliputra from the Bankipur to the Kumrahar side—wooden palisades in Bulandibagh, structures of wood and brick in Bairat, and Sisupalgarh. The Śāl wood *(Shorea Robusta)* widespread in Orissa, was a common material used in the Eastern part of India *(Ancient India,* vol. 8, p. 28). Waddell observed[9] śāl beams of 2′ ft diameter suitably utilised in the Pataliputra architecture. Preserved in the Indian Museum are two 4th century B.C. śāl wood architectural beams, 544 cm. long, each mortised with five holes, which had been used in Kumrahar, Patna. Śāl wood was preferred for its remarkable resistance to water and salinity and for this reason Mesopotemia used to import the material from India.

In Pataliputra wood was used—along with nails and strips of iron—over bed of bricks for the purpose of city drains. Wooden chariots were often provided with iron rims.

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Ship-building was known to the Indians during the pre-Mauryan period. According to Arrian's account, the Kathyioi, a tribe of Pubjab had large dockyards and supplied transport vessels during Alexander's campaign. The Mauryas maintained ship-building as a state monopoly. The ship builders used large quantities of wood and received wages directly from the state.

Wood was used extensively in cities located on the rivers and sea, but Kautilya advised that in view of the fire hazard wood should be replaced by brick for construction. The danger of fire was a constant fear and therefore *nāgarakas* or the city-administrators had to seggregate the carpenters, metalsmiths and fire-using professionals in specific outskirts of the city. The transition from wooden to brick buildings was slow and took centuries.

Whereas wood was used essentially as a constructional material, animal bones and ivory found applications as art items. The craftsmen working in ivory and bone were often connected with woodwork techniques. Remains of ornamental objects in these two materials were found in Bhir Mound. Excavations at Hulas, U.P. and several other Mauryan sites showed 'Eye Goddess' of bone. Ivory figures were obtained from Champa and Taxila even at the pre-Mauryan level.

CLAY-RELATED PRODUCTS

Clay has been the constant companion of mankind from the rural/agricultural to the urban scenario. The importance of the right kind of clay in plant growth and suitable cultivation of crops was recognised through centuries of experience. Varieties of clay were used for construction of mud houses in the villages, for potteries, burnt bricks, terracotta towards the growth of urban civilization.

The Mauryan craftsmen had some knowledge about specific clays and their properties. In the Pillared Hall at Kumrahar, the sandstone pillars were allowed to rest on special foundations which included a layer of special 'blue clay'. This variety of clay was fine-grained, sticky and hardened on compression. The colour was due to its organic content.[29]

Burnt brick was widely used in Mauryan architecture. Archaeologists recognize a particular type of brick as Mauryan. Waddell found the Aśokan bricks to be 16″-18″ in length, 10″-12″ in breadth and 2″-3″ in depth.[30] In later ages, the sizes became smaller, and during the Muslim period, thin biscuit bricks were produced.

The bricks and potteries had long traditions in India and underwent many changes in style across the centuries. The Painted Grey Ware (PGW)—Black Slipped Ware (BSW)—Northern Black Polished Ware (NBPW)—transition in India was related to the processing of specific raw materials. The technologies of PGW, BSW and NBPW had been worked out in the Pre-Mauryan ages and the Mauryan craftsmen fully utilised the earlier knowledge.[31]

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PGW used to be made from well-elutriated fine clay almost free from insignificantly small number of large particles of feldspar, quartz, or limestone. Microscopic observation reveals very fine particles of 10-100μm size. The black marks on PGW and black slip on BSW were of magnetite. Evidently red Fe_2O_3 was applied on the baked pottery and fresh heating under reducing condition resulted in reduced form of iron oxide namely black Fe_3O_4 or magnetite. During the Mauryan era, PGW and BSW were used as common wares throughout North India.

Northern Black Polished Ware or NBPW was recognised as a costly de-luxe ware. Its coal-black surface dressing has a mirror-like gloss. A chemical analysis of the surface finish or slip glaze on NBPW revealed much higher percentages of iron oxide (8-11), sodium oxide (11-13) and calcium oxide (2-4) compared to the values in the core of the ware (0.8-1.5p.c. Fe_2O_3, 0.4-0.7 Na_2O and 0.3-0.6 CaO). It is evident, according to Hegde,[31] that the NBPW pottery was first baked at a lower temperature, 600-700°C and then the slip glaze consisting of red ochre and *sajji matti* (or *sarjika mrittika* or *reh)* applied, and then subsequently baked again at a higher temperature above 800°C in a reducing atmosphere. *Sajji matti* containing variable proportions of carbonate, bicarbonate and sulphate of sodium and calcium is abundantly available (during the summer months) in the river-coasts of the Ganga-Yamuna Doab in Uttar Pradesh. High temperature reaction with the siliceous material in clay produces glassy sodium and calcium silicates. The electron micrograph of the NBPW surface shows opaque isometric crystals of Fe_3O_4 in a background of amorphous glass-like matrix.[31] Evidently, the art of producing NBPW was kept a secret, boosting artificially the price of this de-luxe ware. The technology and tradition of the PGW-BSW-NBPW wares had been worked out earlier and found their climax in development during the Mauryan era.

It is strange that Kautilya does not refer to the potters' guild or to the excellent wares made by them. It is well-known that like carpenters and weavers, the potters also belonged to lower castes, and their expertises were often ignored in the Brahminical literatures. On the other hand *Uvāsaga Dasāo,* a Jaina work referred to the mass production and export of pottery, which may well relate to the Mauryan period.[32]

Whereas ordinary potteries were widely used all over the Mauryan empire, de-luxe NBPW belonged to the rich class and the stone sculptures were meant only for the royal class. S.P. Gupta has linked the widespread terracotta art in the Mauryan period with the emergence of urbanism and middle class. The terracotta tradition had been continuing in India ever since the Harappan era. A typical pre-Mauryan terracotta object was Mother Goddess which gradually developed into temple plaques, molded faces of Lakshmi, Prithvi etc. and hand-made torso of the same figure. Pataliputra excavations clearly show the transition in terracotta art[33] : hand-modelling and archaic style during 600-400 B.C., the

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middle level of 400-300 B.C. demonstrating the dancing and often stylistic figures of the Bulandibagh area and in the upper level of 300-200 B.C. further proliferation in numbers and styles of terracotta.

The growth of the terracotta industry continued unabated even after the collapse of the Mauryan empire indicating the irreversible expansion of the market economy and the size of the middle class. Large number of small icons were meant for the religious ritual ceremonies to be performed by the masses and the small number of delicate objects like dancing girls, laughing boy, smiling girl, flat Naga, mongoose in the round, female figure with applique decorations, heavily ornamented female torso etc. were meant for the affluent art connoisseurs. These exquisite terracotta objects also served as models for the newly emerging sculptural art tradition in stone.[33]

ROCKS, STONES & RELATED ARTS

India witnessed a sudden flourish in the rock and and stone arts during the Mauryan era on account of several reasons. The emperors readily accepted the Persio-Greek tradition of sculpting and engraving on hard and durable surfaces. The Iron age had matured into the technology of martensitic steel tools, and discovery and use of hard minerals such as corundum made smooth polish of pillars etc. entirely feasible.

Ever since the advent of second urbanization, Indian craftsmen became thoroughly acquainted with the indigenous rocks and stones of a large variety, their texture, hardness etc.

The systematic use of building stones in India probably started during the Indo-Greek period, or even earlier during the contacts with the Persians. We find that during the pre-Christian era, many kinds of hard stones were used at Taxila :

Sang-i-abri (a lower cretaceous shell-limestone of a variegated chocolate and yellow colour, abundant in the Hazara and Attock districts), granite, basalt and several kinds of sandstone such as locally available grey *Taraki,* spouted red and white variety from Mathura, buff-coloured fine-grained hard variety from Chunar near Varanasi etc.

The red sandstone of Chunar, Mirzapur etc. have been used in India ever since the period of Aśoka who built with these materials the great monoliths or *lāṭs* bearing his third century B.C. edicts. These were generally polished throughout the portion intended to be exposed, and surmounted by carved and ornamented capitals, upon which figures of lions or elephants were placed.

V. Ball commented that 'the ancient pillars of Vindhyan sandstone have been instrumental in annihilating time by preserving, in an imperishable record, fragments of

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the history of upwards of two thousand years ago'.[34] The traditional continuity is still visible in the Varanasi Ghats, the palaces, walls, minarets, temples etc., built of Chunar sandstone.

The Aśokan pillars are of two types of stone. Some are of the spotted red and white sandstone from the region of Mathura, and others of buff-coloured fine grained hard sandstone usually with small black spots quarried in Chunar near Varanasi. The Śunga builders used red sandstone of Central India.

The Vindhyan sandstone beds often spread for long distances *without* any joints or fissures to break the continuity, in consequence of which very large blocks can and have been extracted for various purposes. Mallet mentioned large blocks found near the quarry of Rupas : 3′ft. diameter 34′ ft. long circular column and a 4′×5′×42′6″ long parallelopiped weighing nearly 60 tons. The material probably belonged to the Aśokan period. Ball noticed and reported indigenous devices for lifting and transporting large masses of stone on very solid wooden wheels.

Some of the Mauryan stone sculptures in the Indian Museum, Calcutta are : Lion Capital of Aśoka, Chunar sandstone 220×104 cm ; Colossal Yaksha, grey sandstone, 163×70cm, fragment of a capital depicting lotus and honey suckle motif, polished sandstone 16.5×13 cm ; Railing Pillar depicting amorous couple standing under a tree, sandstone 63×29×10 cm ; Railing Pillar showing a warrior who is found carrying a sword and a shield, sandstone, 93×23×17 cm ; Ringstone depicting a row of three figures of mother goddess diam. 6 cm., red sandstone, Mathura etc.

There are evidences that the craftsmen of the Mauryan era processed not only varieties of sandstone but also several other kinds of rocks such as granite, quartzite, marble, basalt, laterite, khondalite etc. The advent of carburised iron and steel age permitted the craftsmen to undertake chiselling of hard rocks.

The Pataliputra excavation yielded Buddha's footprint on 2.5′ft. square chipped quartzite. This contained 'the impression of both his feet on it, about 18 inches long and 6 inches broad ; ten toes all fringed with figures of flowers and forms of fishes which glisten brightly in the morning light'.[9] The excavators have found several other 'footprints' on basalt, marble etc.

One of the famous Mauryan arts is the rock cut elephant at Dhauli, Bhubaneswar. The Hill is of *khondalite* of which the Sun Temple of Konark is built. Khondalite sample, a quartz-garnet gneiss, obtained from the Dhavalgiri hill quarry contains red garnet of the alamandine variety which had been found under the SEM photography to undergo oxy-alteration into powdery kaolinite and goethite veins. This explains why the Dhauli elephant or the Konark temple had difficulty in withstanding the ravage of weather.

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The Mauryan rock cut caves of the Barabar and Nagarjuni hills are fascinating for simplicity in conception and elegance in execution. In the Son Bhandar cave, the rock is a metamorphosed shale, not at all suited for a high degree of polish. On the other hand, the granite surfaces in the Barabar and Nagarjuni hill caves being hard, took high polish when abraded and glistened like mirror. The techniques of scooping, chiselling, grinding and polishing in the Mauryan rock caves and stones have been meticulously documented.[36] A sculptured panel on a lintel stone from Bharhut showed the method of excavations in a hill for making a cave. Long pointed tools and chisels were shown to take out chunks of stone. Nails were fixed at regular intervals to make landing steps. Lomas Rishi cave showed a row of vertical grooves on the bare rock, providing evidence for channel method of stone-cutting. Some of the sophisticated iron tools used during the Mauryan era—such as heavy duty wedge, chisel, bar, needle, point etc.—had been invented earlier ; a huge variety of tools has been found in the pre-Mauryan levels at Atranjikhera.

Gupta suggested[18] that coarse sand and fine sand were used for grinding and polishing of rocks and stones. We submit that even corundum was used, specially for polishing granite and other hard surfaces.

Many Mauryan art objects were made out of softer rock materials such as marble and steatite. The tradition of steatite in India started during the Harappan era, or possibly earlier.

The pinnacle of Mauryan art lies in the Aśokan pillars and capitals. Basham aptly commented : "The sculptured capitals are great as works of art, but as evidence of Indian technological achievement, the (sandstone) columns are even more significant. Weighing as much as fifty tons and measuring some forty feet, they were carved from single blocks of stone (mostly from the quarry at Chunar), given a polish of wonderful hardness and lustre, and often transported many hundreds of miles to their present positions. The process of their manufacture, polishing and transport has not yet been fully explained."[37]

According to available evidence, a pit, about 2.4 metre deep was dug in the ground for planting an Aśokan pillar. A large square slab of stone was placed at the bottom of this pit. After that the pillar was lowered to rest on the slab. The empty space round the pillar was then packed with solid materials depending upon the consistency of the soil.[18] John Irwin felt that some of the pillars which were uninscribed, and did not have underpinning stones, were of pre-Aśokan origin. Gupta disagrees[18] and suggests that at some places the bed rock was hard and underpinning stones were not required. Besides Aśoka did not have all his pillars inscribed in the beginning. The idea of inscribing his moral edicts on rocks and pillars came to his mind at a later date.[18] The controversy on the subject still continues.

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The ringstones, like monolithic pillars, are exquisite specimens of the Mauryan and Late Mauryan art. Twenty-one discstones were found from a hoard in the Murtaziganj locality of Patna. The Mother Goddess, human, plant and animal life commingle within a framework of geometric patterns.

The ringstones were generally chiselled out of soft stones such as soapstone or steatite, slate, shale and alabaster. There were three broad types.

The first is a fairly thick and large piece of stone about 10 cm. in diameter and plano-convex in section. In the centre it is marked by a prominent hole with sloping sides, achieved obviously with the help of a metallic drill with conical end as well as chisels of various sizes. The hole thus achieved is U shaped, showing a broad mouth and slightly narrow rounded base.

In the second type, the hole is very large and perfectly straight. The figures carved and parallel striations on the surface prove that lathe technique was adopted.

The third type is small, 5-6 cm. in diameter, having no hole and therefore called discstone. The obverse is beautifully carved, and the reverse is flat and plain.

These ringstones/discstones have been obtained from various places such as Murtaziganj in Patna, Rajghat, Kaushambi, Mathura, Popar, Taxila etc. and in all sixty-four of these are known so far. Carved on these stones are running lion, birds, Mother-Goddess dressed in *dhoti,* flanked by *nāgapushpa* motif, prostrating males alternating with lizards etc.[38]

REH, GLASS & NON-GEM MINERALS

In connection with our discussion on the NBPW pottery, we mentioned about Hegde's discovery[31] that *reh* or *sajji matti (sarjikā mṛttikā* in Sanskrit) must have been used in providing the glaze of the said pottery. The efflorescent white river-bed salt deposits have been variously known as *reh* in Uttar Pradesh, *khari* in Bihar, kallar in Panjab etc. Typical *reh* samples from Moradabad and Meerut areas have been found to contain 4-10 p.c. Na_2CO_3, 3-9 p.c. $NaHCO_3$, 1-4 p.c. NaCl and 1-9 p.c. $Na_2 SO_4$. Lixiviated and evaporated samples known as *saji matti* in Kanpur contain higher proportions of Na_2CO_3 (27 p.c.) and Na_2SO_4 (34 p.c.). Auden *et al* estimated the huge amount of these salts which must have been obtained from the reh-infested districts of Uttar Pradesh alone in pre-modern India.[39]

Reh was the most likely source of faience-making during the Harappan period and of glass-making in the Historical period. The earliest glass in Hastinapur and Ahicchatra were of soda-lime-silicate type. Coloured beads were commonly blue and green, iron and copper oxides being the colouring constituents. Sen and Chaudhuri have provided literary and archaeological evidence of glass in ancient India.[40]

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Kopia (Anupia during Buddha's time) situated 31 miles from Basti in Uttar Pradesh was one of the earliest glass-making centres in Historical India. Dated 5th century B.C., its glass-making factory has revealed to its excavators, crucibles, glass slags and typical beads which found their way in the steatite casket at the famous Piprahwa stupa of the Buddha.

Substantial amounts of potassium (K_2O) in some of the pre-Christian era sample glasses form Kausambi, Rajghat, Taxila suggest that apart from *reh,* the potassium-rich lake incrustations from Lonar, Sambhar or plant residue must have been used for glass-making. The Sanskrit literature clearly distinguishes between sodium alkali *(sarjikā kṣāra)* and potassium alkali *(yava kṣāra).* The *Arthaśāstra* refers to calcination of barley-ash (to produce K_2O) and of conch-shell etc. (to produce lime of $Ca(OH)_2$).

The Taxila excavations clearly show the use of various colouring agents in glass-making such as iron, copper, lead and antimony oxides, and also the emergence of distinct Mauryan traditions in varieties of glass bangles, beads and seals. The shape of the Mauryan bangles was generally plano-convex or plano-conical in section, but narrower in proportion to their thickness than the later specimens from Sirkap. The popular shapes of the glass beads were the scaraboid (characteristic Persian), faceted tabular, collared leech etc. Blue and green were the most popular colours of the bangles and the beads. The famous 'eye-bead' found in the Bhir Mound were pre-Mauryan in character.

Kautilya's *Arthaśāstra* mentioned many non-gem minerals being commercially used. Sulphides of antimony, mercury and arsenic (both yellow and red) were used as pigments as well as alloying reagents. Red lead was another commonly used pigment. Green iron sulphate and blue copper sulphate were employed as colouring agents as well as mordants in dyeing clothes.

Corundum or *Kuruvinda,* having hardness nine in Moh's scale, was appropriately used as an abrasive (2.14.48 in *Arthaśāstra)* like diamond powder. Possibly mined in the Rewa State, this material used to be imported from India by the Romans for marble sawing and polishing of stones.

METALLIFEROUS ORES, MINES & GEMS

The *Arthaśāstra* is the earliest Indian text dealing with the mineralogical characteristics of metallic ores and other mineral—aggregate rocks. It described a gold-bearing ore (2.12.5) which has been interpreted[41] as typical auriferous pyrite. Similarly the silver ore described (2.12.6) seems to be a complex sulphide ore containing silver, copper and lead. Copper ores were stated (2.12.12) to be heavy, greasy, tawny (chalcopyrite left exposed to air, tarnishes), green (colour of malaehite) or blue (azurite colour). Lead ores were stated

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(2.12.13) to be *kākamecaka* or greying black (this is the colour of gabena). Density of the ore was known to be an indicator of metal content : "When there is increase in heaviness, there is increase in metal content" (2.12.7).

Mines were recognised to be 'the source of implements of war' (7.14.25). 'The treasury had its source in the mines' (2.12.37) Gold, silver diamonds, gems, pearls, corals, conchshells, metals, salt and ores were recognised as materials coming under the purview of mines (2.6.4). The superintendent of Mines was supposed to be an expert in mineralogy, smelting and colouring gems (2.12.1) and to establish factories for the above items and also derivatives like caustic alkali (2.12.27). The metallic ores had to be sent to the respective 'Metal Works' for producing 'twelve kinds of metals and commodities' (2.12.23 & 35-36). Through an elaborate state of legislation, the state was supposed to have complete control over the mineral resources. Megasthenes attested in his *Indika,* that 'India has numerous underground veins of all sorts of metals'.

Archaeological evidence suggests that there were a number of prosperous towns flourishing in Rajasthan during the Historical Period (400 B.C. onwards) close to the copper mining areas (also yielding zinc, lead and silver) ; many of these are unfortunately undated. The *Seraks* or lay Jains initiated copper mining in the Singhbhum and Hazaribagh districts, Bihar during the pre-Christian Era ; Kushan type copper coins have been found in the Rakha Mines. Again, the C-14 dates are not available. Ambāmātā, Gujarat Mine (140 B.C. onwards) was exploited during the Śunga period for copper, lead and zinc ores. We have reported mining of metallic ores in India elsewhere.[42]

The recent and remarkable work of Lynn Willies[43] has indicated the earliest C-14 datings in ancient Indian mining : 1260 ± 160 B.C. date of Rajpura-Dariba Mine near Udaipur, its ore-body having Cu-Zn as Well as Pb-Ag ore lenses. Tabulation of the various C-14 data in Rajasthan show that the Rajpura-Dariba Mine was exploited between 1260 to 1000 B.C., and then again 375 B.C. to 110 A.D. ; Rampura-Agucha Cu-Zn and Ag-Pb Mine 370-200 B.C. ; Zawarmala Mine with Zn-Pb-Ag ore 430 B.C. to 60 A.D., and continuously in the post-Christain era. All these dates cover the Mauryan era, although it is clear that the tradition during the Historical period started 50-100 years before the Mauryan era.

Journey down the Zawarmala Mines revealed several interesting dates and historical artefacts. A sample of timber from a set of steps (32 m. depth from the surface) has yielded a date of 170 B.C. at 90 m. depth. Prof. K.T.M. Hegde found[44] several pear-shaped pots of Ahicchatra 10A type (5 litre capacity) 'datable to the last quarter of the first millennum B.C.' that is to say possibly belonging to the Mauryan period. An wooden biped in the 'Timber Chamber' yielded an age of 140 B.C. Down below in the 'Main Chamber', burnt wood (bamboo and acacia) residues correspond to a date of 200 B.C. ; in the same area, pottery lamps *(pradīpa* or *diyā)* were found kept on ledge for illumination.

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The use of good paths, ladderways, semi-fixed lamps, neat stacking of waste rock etc. suggested the use of a large labour force. Lynn Willies feelingly wrote about this scenario :

"One has a mental picture of perhaps some hundreds of persons at work, some carrying fuel or support timber in, and ore and rock waste out, probably useing baskets carried on the head, with others conveying water in a similar way".

The Zawar tradition has brought glory to India in the field of zinc. As we would point out later, India was the first in the world to discover the reduction—distillation route for production of zinc metal ; and this was achieved around fourth century before Christ.

Reverting back to the *Arthaśāstra,* we find that the text mentioned a wide variety of gem minerals characterised by shape, colour and lustre. Hardness was considered to be an important property : diamond (10) or *vajra* being the hardest followed by corundum (9) or *kuruvinda,* topaz (8) or *puṣyarāga,* quartz (7) or *sphaṭika* and so on upto soft materials such as coral, pear 1 and steatite. The bracketted figures in the previous sentence refer to the modern Moh's scale of hardness.

Max Bauer commented that the working of the most important diamond deposits in India known at present 'date back not to very remote periods, probably in all cases subsequent to the year 1000 A.D'[45] Though we do not have specific C-14 dates, we disagree with Bauer on the basis of Kautilya's *Arthaśāstra,* which mentions 4th century B.C. Mauryan mines of *vajra* at Sabhārāṣṭra or Vajragṛha (Wairagadh in Vidarbha), Tajjamarāṣṭra in Orissa etc. The text described (2.11.40) a good diamond sample as 'big, heavy, capable of bearing blows and capable of scratching a vessel (*i.e.* hard), having symmetrical points, scattering incident light and brilliantly shining'.

The earliest mines of corundum in India were possibly located around Pipra, Singrowli (latitude 23°57′N, longitude 82°44′E) in the erstwhile Rewah state and this abrasive might have been widely used in polishing the Aśokan pillars and the statues of the Mauryan and Śunga periods.

Long before the Mauryan era, India had developed the traditions related to agate and carnelian. Beryl or *vaidūrya* was mentioned by Panini ; we have explained elsewhere[46] that the original word was the Dravidian Veḷ-uriya which meant white or light coloured gem and thus included white quartz and light green beryl. These two gems were mined mostly in the southern peninsula and became popular during the Buddha's time. Saubhuti presented 'his spectre made of gold and set with beryls' to Alexander. The Buddhist relic caskets of beryl and rock crystal heve been found from the stupas of Bhattiprolu and Piprahwa corresponding to the Mauryan period. The Indian Museum, Calcutta has several steatite caskets containing Buddhist relics. One Piprahwa coffin or chest 132×92×65cm. made of

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sandstone contained vases, bones and small objects. There is a fine crystal bowl (11.5 cm. height, 34 cm. circumferance) with a fish-shaped handle. It is made of mountain crystal (or *sphaṭika)* out of two pieces only. Among the small pieces of jewellery were gold leaf, with the spiral ornament, and a few figures of a female on gold or silver pieces, perhaps representations of the Earth Goddess.[19]

Arthaśāstra mentioned a large number of coloured gems such as green *vaidūrya* or beryl, blue *indranīla* or sapphire, red *padmarāga* or ruby and also red *saugandhika* as spinel-ruby etc. It is very significant that the text does not mention *marakata,* the Egyptian gem or emerald which used to be imported to India during the Greco-Roman Era. This proves the pre-Christian antiquity of the text. *Bālasūryaka* (crimson like morning sun) mentioned in the text was Balas-ruby, a magnesium-aluminium spinel ruby coming from Badakshan. This proves the intimate commercial contact between Afghanistan and the Mauryan empire. Aśoka presented to the King of Sri Lanka, Devānāmpiya Tissa golden and other ornaments and 'costly hand-towels which are cleaned by being passed through the fire' ; these hand-towels were most likely made of woven asbestos, which might have come from Afghanistan.

Excavation made on the supposed site of Aśoka's throne yielded sapphires, emeralds, mostly broken into splinters, two pebbles of iolite, some beads of Lapis Lazuli, coral and some imitation emeralds, made of glass etc. Blue sapphire and iolite ($Mg_2 Al_4 Si_5 O_{18}$) were stones from Sri Lanka which did not have the blue lapis lazuli, a definite importation from Afghanistan.[47] *Mahāvaṁśa* mentioned that the King of Sri Lanka presented to Aśoka 'sapphires, rubies, eight varieties of exquiste pearls and lapis lazuli'. Ball doubted the last item ; Sri Lanka probably sent blue iolite and not lapis lazuli which occurred in Afghanistan and not Sri Lanka.[47]

The *Arthaśāstra* provided Sanskrit names of many other gem minerals which have been equated with asteriated sapphire, zircon, garnet, cat's eye (both quartz and beryl type)—sunstone, moonstone etc. It is quite evident that the tradition of gemmology in India started during the Mauryan era and through the Roman and Gupta eras, the science of *Ratnaśāstra* was developed. The *Arthaśāstra* was a distinct pace-setter insofar as it mentioned Balas ruby, beryl (but not emerald) and clearly distinguished between beryl and cat's eye. During later centuries some gemmologists like Buddhabhatta and others unnecessarily got confused between green beryl and green cat's eye.

METALS, ALLOYS AND COINS

The tradition of metallurgy in India is very ancient. We find copper in the pre-Harappan civillizations. The Harappans used to prepare copper alloys containing tin, arsenic and lead. Gold and silver metallurgies were well in vogue. Around 1200 B.C. the Iron Age started

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in India, and by that time, Lothal and Atranjikhera had produced brass. In this section we would briefly outline the Indian achievements in metallurgy during the fourth to second centuries before Christ.

Copper technology was revived in India during the Historical Period. The Sohagura (Gorakhpur district) copper plate was made during Candragupta Maurya's time. The inscription of it described certain relief measures during famine. Bharadwaj analysed a piece of copper sheet from Rajghat, Varanasi dated fifth/fourth century B.C. and found this to be 95.45 p.c. copper, 1.75 p.c. CaO, 0.96 p.c. iron, 0.25 As, 0.15 Ni. The 600-400 B.C. samples from Rajghat were made of unalloyed copper whereas 400-200 B.C. samples form the same site contained tin.

A bronze fragment from Rajghat assayed 13.99 p.c. tin, copper bangle 1.82 p.c. and an uninscribed rectangular coin 7.83 p.c. tin. The impurity analyses of the artefacts and ore (the presence in both of Ni, Co, Mo and very low frequency of Pb, As, Sb) suggested that the Rajghat copper artefacts were probably derived from Bihar.[48] High tin in the Kaushambi and Sonepur Period II bronzes indicate that possibly Hararibagh area tin ore mines were exploited or some tin might have been imported from South-East Asia during the Mauryan era.

Analysis of the Rajghat copper slag showed that it was chiefly iron silicate with 5.39 percent calcium oxide, whereas the Ahar slag did not contain any calcium oxide. Evidently lime was used as flux, a new innovation in Nanda/Mauryan era India.

Presence of 1 p.c. (and above) copper oxide in the metallic phase shows that the molten copper was not properly 'green poled' or deoxisidised. Metallographic examination showed that the copper sheet of Rajghat had globular alternate banding of Cu-CuO eutectic. Annealing twins provided the evidence of heat-treatment having been done. Bronze coins had seggregated copper-rich zone and tin-rich grain boundary, proving that it was a cast structure.[48]

Neogi referred to the big solid copper bolt found in the Rampurwa Aśoka pillar near the Nepalese border.[49] It was evidently employed in fastening the colossal lion-shaped stone capital to the pillar itself. The bolt or dowel is barrel-shaped in appearance and slightly tapering at the two ends. It is 24 and 1/2 inches long, circumference at the centre being 14 inches and at the sides about 12 inches. Originally cast, this piece was 'exquisitely worked into shape apparently with hammer, slight marks of which are visible.'

A beautiful copper *loṭā* was produced in the Kangra district depicting prince Siddhartha going in a royal procession. Taxila produced copper wires as well as bronze mirrors. During 5th—2nd century B.C. Taxila produced flat bar, rod, ear-cleaner in reasonably pure copper (97-99 p.c. copper), many more varieties coming later, a large varieties of bronze items

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containing 21-24 p.c. tin, leaded bronze items assaying 3-8 p.c. lead and 7-10 p.c. tin, high zinc (20-34 p.c.) brass, copper-nickel alloy items containing 9-20 p.c. nickel, which was known as *pai-tung* or white copper alloy. These were Pre-Mauryan, Mauryan or Late Mauryan innovations.

The Iron Age started in India around 1200 B.C. almost simultaneously in at least three nuclear centres : around Atranjikhera in the north-west, Pandu Rajar Dhibi, Bengal-Bihar area in the east and the Karnataka region in the south. The solid state reduction product wrought iron contained slag and was spongy and softer than bronze ; hence it was not immediately useful. Centuries passed before the technique of carburisation and hardening could be mastered. Thus the impact of the Iron Age could be felt only during the second half of the first millenium B.C. by that time Bihar, containing inexhaustible reserves of iron, became the natural centre of iron metal production and political empire.

Bharadwaj's studies[48] have revealed the quality of iron that was produced in Rajghat, Varanasi during the NBPW phase (600-400 B.C.). Six iron objects were analysed—blade, arrowhead, broken nail, piece of rod, a fragmentary piece and a bent nail.

The samples showed ferrite, slag mixture and little pearlite. A small amount of iron carbide was noticed at the grain boundaries. The carbon content of the specimens varied between 0.12 to 0.42 p.c. except for the bent nail which contained 1.1 p.c. and showed deliberate effort for carburization.[48]

At Ujjain, calcium compounds such as lime or aragonite were used as flux. There is no evidence of flux having been used at Rajghat. High percentages of Fe_2O_3 in the Rajghat slag indicate that the attempt for reduction was inefficient. Rajghat iron was presumed to have been produced from the Singhbhum ore since both have been found to contain detectable amounts of phosphorus and titanium.[48]

Between 615 and 540 B.C. there were 72 iron-making sites in the Nagpur region. Naikund and Mahurjhari had major smelting facilities and produced axe containing 0.9-1.0 p.c. carbon showing banded widmanstätten structure of ferrite and pearlite. The 528 B.C. (onwards) Ujjain facillities included furnaces using fluxes, forge, water jar 'possibly for water-quenching of hot samples'. The earliest evidence of steeling through water-quenching has been obtained from 3rd century B.C. Pandu Rajar Dhibi of the Mauryan era.[50] One 255 mm sickle from the site has a sharp cutting edge, assays 0.22 p.c. carbon and revealed through electron micrography the clear structure of tempered martensite (a clear evidence of quenching and steeling process). Microhardness measurements showed a value of VHN 391 in the ferritic region, and 549 in the martensitic region. It is evident that the Mauryan era smiths of Pandu Rajar Dhibi transformed the Iron Age to the Steel Age in India.

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We suspect, though we cannot prove, that the technique of quenching was first developed at Ujjain. During Gautama Buddha's time, King Pradyot of Ujjain went to Taxila, according to a legendary tradition, to defend the country against the Persians. From Pradyot to Candragupta we had the uninterrupted tradition of progress in the Iron and the Steel Age for the sake of national defence.

The issue of crucible steel in India is a vexed question. We do not know when this tradition was started. Our surmise is that Indians might have attempted to fuse carbon with iron in crucibles of circular cross-section even during Kautilya's time. The *Arthaśāstra* mentioned several words, related to ferrous materials, such as *Kālāyasa* (wrought iron), *vaikṛntaka* (possibly iron from magnetite), *tīkṣṇa* (carburised iron or steel giving sharp tools) and *vṛtta* (2.17.14 ; also 2.12.23 and 4.1.35). Several scholars have identified *vṛtta* with steel on the contextual basis. We also feel that *vṛtta* was the crucible steel or the cementation product, obtained from the South Indian magnetite ore, and known there as *wootz*. The similarity of the two words is noteworthy ; the name *vṛtta* arose possibly in view of the approximately *circular* cross-section of the steel ingot solidifying in the crucible.[13,51]

Prakash and Tripathi have traced the evolution of iron equipments in India chronologically[52] and categorised them under three headings : early stage materials (upto 600 B.C.), middle stage (600 to 100 B.C.) and late stage (100 B.C to 600 A.D.). We are concerned with the 'middle stage' (which encompasses the Mauryan era) when the following items were specifically developed :

Hunting Tools — spear, lance, dagger, sword, elephant goad

Agricultural Tools — spade, ploughshare, hoe, chisel

Household objects — tong, disc, ring, spoon

Building Materials — pipe, socket, plump-bob, chain, door hook etc.

During the historical period after 600 B.C. the use of iron expanded greatly and this trend continued right across the late stage upto 600 A.D. The Mauryan era scenario describing *āyudhāgāra* or armoury, various types of *khargas* or swords, hot forges to make them etc. are neatly described in the *Arthaśāstra*. The uses of hard iron and sharp steel were manifest not only in armoury and the equipment of war but also in the opulence of agriculture, spades and ploughshares and the new stone-carving technology and inscription of the sublime philosophical messages on hard and durable rocks.

We have reported elsewhere[12,53] Lothal brass containing 6.04 p.c. zinc and Atranjikhera bronze-brass containing 16.20 p.c. zinc and 20.72 p.c. tin ; both were probably obtained by the cementation process. Werner and Haedecke[54] have proven that the cementation process is not adequate for producing brass with more than 28 p.c. zinc for which metallic zinc

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must be mixed with copper under molten condition. Thus, the Bhir Mound, Taxila vase of the 4th century B.C. (BM 15-284) assaying 34.34 p.c. zinc indicates that India had produced metallic zinc before fourth century B.C. [55] The excavation of the Agora in Athens yielded a roll of sheet zinc, nearly pure, containing 0.06 p.c. cadmium.[56] It is most likely that the Greeks had carried this as a souvenir from the Mauryan India. For over two millennia, India retained its monopoly in the art of making zinc by the reduction—distillation process till there was a technology transfer, during the first quarter of the 18th century, from Zawar, Rajasthan to Bristol, England![53]

The *Arthaśāstra* specified that the Director of Metals *(lohādhyakṣa)* should establish factories for metals (other than gold and silver) *viz*, copper, lead, tin, bronze, ball-metal, *vaikrantaka* (?) *loha* (iron or metal in general), vṛtta (steel ?) and *ārakūṭa* or brass. Zinc was not separately mentioned probably because it did not have any other use except making of brass, and the Sanskrit names of zinc : *rasaka* and *yaśada* were evolved during the post-Christian era. *Lohādhyakṣa* had to supervise the production of the above metals and the corresponding metal wares (2.12.23).

The duties of the *Suvarṇādhyakṣah* or the 'Superintendent of Gold' were defined in the section 2.13. He was supposed to establish industrial outfits and employ goldsmiths, well-versed in the knowledge of not only gold and silver, but also of the alloying elements and of gems which had to be set in the gold and silver wares (2.13.1-2 & 58-59). The Superintedent had to arrange security preventing smuggling, theft and pilferage by the artisans.

The purity of the raw materials-gold and silver ore, scrap and ornaments for reuse—had to be checked through tests such as whitening of gold by vermillion or iron sulphate (2.13.19).

Gold smelting was known as *suvarṇapāka*(1.18.8). Gold was purified by a process of extraction with molten lead. Similarly, silver could also be purified using molten lead to produce *tāra* or ornament-grade silver, and then used as such. Pure gold and silver were often alloyed to produce different colours. Various proportions of copper, iron or colouring matter could be incorporated in gold or silver. Two parts of silver and one part of copper constituted *tripuṭaka*. An alloy of equal parts of silver and iron was known as *vellaka* (2.14.20-22).

In the *Arthaśāstra* we find the word *rasapāka* which could stand for liquid state chemical metallurgy. During the Śunga Period, Patañjali wrote a text *Lohaśāstra* which is not available at present. The physicians took interest in the possible therapeutic values of metallic oxides and hence in metallurgy. Their *Rasaśāstra* texts written during post-Christian eras are storehouses of information regarding ancient metallurgy in India. Both the *Ratnaśāstra* and the *Rasaśāstra* texts evolved from the Mauryan era traditions.

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Reverting back to the *Arthaśāstra,* we note that the range of a goldsmith's expertise lay in setting, stringing, bead-making, making of solid and hollow objects, plating, coating, fixing and gilding (2.13.37-46 ; 2.14.17). The main products were gems set on silver and gold, beads, gold-plates and gold/silver ornaments (2.13.33, 38-39 and 44-46). Lead, copper or silver objects were coated with a gold-leaf *(ācitakapatra)* on one side or with a twin-leaf fixed with lac, vermillion, red lead etc. (2.14.26-42). The archaeologists have obtained many Mauryan art in gold such as disc with repousse ornamentation of S motif, plaques from Lauriya-Nandangarh Piprawaha depicting Mother Goddess etc.

The art of setting gems in gold : *kāncanakāru* and *kācārpaṇa (Arthaśāstra* 2.13.33 & 38) had their origin in India. This is attested through references to King Saubhuti (Alexander's contemporary) having jewel-studded golden sandal and golden staff studded with beryls and also references in the Buddhist texts *Mahāvagga* and *Cullavagga* forbidding monks to use shoes or bowels studded with beryl, crystals or pearl. During the post-Mauryan era however there were marked Greek, Scythian and Parthian influences on Indian art related to gem incrustations, inlays, intaglios etc.

The earliest coins found in the Bhir Mound, Taxila are bent silver bars bearing wheel-like symbol, Persian *siglos,* tiny pieces weighing 2-3 gms. and several punch-marked silver pieces. Functioning in a silver-base economy, the Mauryas used copper whenever faced with shortage of silver. Many of the Mauryan coins were made of copper, plated with silver. We have already mentioned the Mauryan era C-14 dates in the Rajasthan mines of Zawar, Rajpura-Dariba, Rampura-Agucha etc. where zinc metallurgy aided the brass industry, and smelting of lead ore provided silver as an important by-product. Later Euthydemus II (180 B.C.), the Bactrian king of Taxila could draw upon the source of nickel from Central Asia to produce 'white copper' coins assaying 20 p.c. nickel, 1 iron, 0.6 cobalt and rest copper.

The *Arthaśāstra* described a system of coinage based on silver and copper. One silver *paṇa* led to a series of 1, 1/2, 1/4 and 1/8. One copper *māṣaka* was valued as one-sixteenth of a *paṇa.* There were pieces of one, one-half and one-quarter *māṣaka,* the last one being known as *kākaṇī.* The composition of the silver *paṇa* was typically one part of hardening metal (iron, tin, lead or antimony), 4 of copper and the rest or 11 of silver. Such a composition has been confirmed in punch-marked coins bearing Mauryan symbol of mountain or stupa.[57] Similarly copper coin used to have one-quarter hardening metal and the rest copper (2.12.24).

The Mint Master or *Lakṣaṇādhyakṣaḥ* was supposed to supervise minting (2.12.24). *Lakṣaṇa* in this name refers to the emblem of the state stamped on the punch-marked coins. The use of the word *bimba* or die (4.4.20) suggests that the coins were punch-marked and not cast. The examiner of coins or *Rūpadarśakaḥ* was authorised to monitor the production, purchase, sell and monitor circulation *(panayātrā)* of the coins (2.12.25-26 ; 4.1.44).

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SOCIO-ECONOMIC FACTORS

Megasthenes, the Greek ambassador who visited Candragupta's court stated that the Indian society was divided into seven classes : philosophers, farmers, soldiers, herdsmen, artisans, magistrates and councillors. His observations were rather tentative and the divisions that he mentioned were more economic than social. Kautilya's description protrayed how the State viewed the commercial life of the nation ; he mentioned the superintendents of :

gold and goldsmiths, the store-house, the commerce, forest produce, armoury, weights and measures, tolls, weaving, agriculture, liquor, the slaughter-house, prostitutes, ships, cows, horses, elephants, chariots, infantry, passports and the city superintendents.

This list gives us a rough idea of the urban and royal patronage extended to different trades and professions. Guilds had been evolved even during the days of early Buddhism, but the Mauryan kings organised them under the state patronage. Political unification and strong centralised government provided impetus to the various crafts and the emerging middle class which survived even after the decline of Mauryan empire. (The economic growth under debased currency was perceptible even in the Śunga dynasty.) Special patronage was extended to the armourers and ship-builders who were directly paid by the Mauryan state. Various guild outfits expanded to the size of small-scale industries employing *karmakāras* and *bhṛtakas* who were regarded as free labourers working for a regular wage, and the *dāsas* who were slaves *(Arthaśāstra,* 3.13.14). King Aśoka also refers, in his Ninth Rock Edict of Girnar, to *bhatakas* and *dāsas.*

The lowest order in the social scale of the Mauryan society was not the slave but the outcaste, the person belonging to the despised classes. Leather workers were despised and because of this the *rathakāras* were also considered degraded, since their work involved handling leather. The *vena* caste basket-makers, *nesāda* caste fishermen etc. lived on the edge of the cultivated land. Potters, weavers, barbers, dancers, snake-charmers and beggars were all grouped together as despised castes. They were not banded into guilds which could act as organizing bodies, since they were few in number, scattered and helpless in the Brahminical society.[58] Even the Buddhist Order shunned social activism and reform.

The caste system became rigid after the Mauryan Era but it cannot be denied that even the *Arthaśāstra* exhibits casteist bias when it says that 'heretics and *caṇḍālas* shall live beyond the burial grounds', *i.e.* well outside the boundary of the city (2.4).

PHILOSOPHY OF SCIENCE

There were strong resemblances between the phenomena of the first urbanisation in India (Harappan civilization) and the second, in the *mahājanapadas* of the first millennium B.C. Like the first phase, the second, culminating in the Mauryan empire, witnessed not only a strong material civilization and external trade, but also the revival of the necessary infra-structure for scientific standardisation of commodities and parameters.

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The *Arthaśāstra* prescribed standardisation *(pautava* from the word *pu,* to purify) of weights *(tulā),* measures *(māna),* space *(deśa)* and time *(kāla)* (sections 2.19. and 2.20). A superintendent *(pautavādhyakṣa)* was supposed to supervise the manufacture and proper use of standard weights and measures (2.19.1).

Standard weights were made of iron or metallic stone from Magadha or Mekala hills which would not be affected by heat or water (2.19.10). Similarly, length, area and volume or space *(deśa)* were standardised (2.20.1-27). Time *(kāla)* was standardised in terms of the solar shadows (gnomon instrument), and for the night and a cloudy day, by the water-clock or *nālikā* (1.7.8 ; 1.19.6). A *nālikā* was defined as the time taken for one *ādhaka* of water in a jar to flow through a hole of diameter equalling that of a four māsaka weight gold wire having a length of four *aṅgulas* (2.20.35). This is a remarkable analogue of the modern standardisation of time in terms of rate of fluid flow through nozzle of a specified diameter under a given hydrostatic head.

The early Indian literatures such as the *Nāsadīya Sūkta* in the *Rigveda* and also Uddālaka Āruṇī's deliberations in the *Chāndogya Upaniṣad* provide evidence of India's rich heritage in philosophy of science. Panini stressed on proof *(pramāṇa,* which also means standard), original discoveries of knowledge 'which had not existed' *(upajñā),* and their applications *(upakrama).*[13] Kautilya emphasized on accurate measurements and standardisation in trade and commerce.

Whereas the followers of Manu considered philosophy to be a subject subserving the Vedic lores, Kautilya asserted that *ānvīkṣikī* or 'investigative philosophy' was supposed to investigate, by measns of reasoning, not only the hazards of economics and politics, but also *ḍharmādharmau trayyām* or 'what is spiritual good and evil in the Vedic lore'. It was boldly proclaimed that 'philosophy is ever thought of as the lamp of all sciences, as the means of all actions and as the support of all laws and duties' *(Arthaśāstra,* 1.2.2-12).

Kautilya's scientific attitude shines brilliantly in his sharp criticism of the obsession for astrology : 'what can the stars do to guide one's destiny ?' (9.4.26). In the section discussing methods of ridding the country of plagues and pestilences, suggestions of both the kinds—rational and magic ritual have been mentioned. It is most likely that the latter suggestions incorporating magical means were stealthily inserted by later-day editors such as Viṣṇugupta.

CONCLUDING REMARKS

It needs to be emphasized in conclusion that this paper has been heavily weighted in favour of *material technologies* (during the Mauryan era) rather than the basic sciences. The subjects of mathematics (including arithmetic and geometry), astronomy and medicine

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had developed as basic sciences in the Vedic India and progressed further during the Historical Period from century to century. However, we do not have any specific text on these basic sciences which could be firmly dated to the Mauryan era. Nor do we have any evidence that specific advancements in these sciences were made during the said era. Geometrical and astronomical research in India got substantial boosts much later, after prolonged contact with the Hellenistic Greeks. Similarly, therapeutic studies and surgical innovations were upgraded in Taxila chiefly on account of the contacts with the outside world. The liberal and humane administration of the Mauryas naturally disseminated medical infra-structure and know-how throughtout the country.

The main technological achievements during the Mauryan era lay in the fields of iron-based technology, rock-art, stonecraft, agriculture, transportation, mining, the uses of wood, metal, alloy, gem and other minerals etc. Measurements and standardisations were highlighted. From Panini to Kaulilya, the level of rational thoughts improved to reach decent philosophical and logical standards.

The other unique feature about the Mauryan era was its firm tradition of writing. The Brahmi script was skilfully adapted to the sounds of Indian language. It may have begun much earlier but by the time of Aśoka, it was, in the words of A. L. Basham, 'the most scientific script of the world'. In this script (also in *Kharosthi)* the inscription of *Dhamma,* the perennial philosophy of Buddha and Aśoka, was 'engraved wherever there were stone pillars or stone slabs, so that it may last long'. The eternal message would indeed last for ever, since as Aśoka prophesied (in his 7th Pillar Edict) :

"The glory of *Dhamma* will increase throughout the world, and it will be endorsed in the from of mercy, charity, truthfulness, purity, gentleness, and virtue".

Coupled with the sense of *Dhamma* was the unfailing spirit of maintaining physical strength to prevent external aggression and internal dissension. Non-violence was recognised as the best method only if backed by adequate strength *(Arthaśāstra,* 1.3.13). The intellectual climate in the Mauryan society was therefore conducive to the growth of economy, science and technology.

But was everything perfect ? Was the Mauryan society really stable? Did science and technology progress unabatedly? One negative feature was the continued strength of the theologians who promoted casteism leading to codification of the *Manusmrti* in the post-Mauryan Śunga period. Casteism caused incalculable damage to the fabric of Indian society, adversely affecting growth of critical thinking, new knowledge and national unity. Religious obscurantism dimmed analytical thoughts. Kautilya's 'lamp' of *ānvīkṣikī* or investigative philosophy was extinguished by the wind of theological fundamentalism.

The Mauryan administration was over-centralised. During this era, the concept of nationhood was emerging but the country had not evolved any sense of democracy, not

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even continued the rudimentary notion of collective rule which was practised earlier by the princes of Vaiśālī during Gautama Buddha's time. Where was the guarantee that the benevolent rulers like Kautilya, Candragupta and Aśoka would be succeeded by worthy followers? The whole world had to wait for two more millennia before pluralistic democracy could gain a firm foothold confronting monarchial despotism. Significantly, only then could modern science emerge and challenge theological obscurantism.

Elsewhere[59] we have surveyed the entire canvas of human history and tried to discover the optimal social factors which are conducive to the emergence and sustenance of science and technology. A few of these beneficial factors existed in the Mauryan society, eventually got submerged on account of casteism, internal disunity and external aggression, and few centuries later, resurfaced during the Gupta era. The Aśokan traditions have gloriously survived till to-day both in the material (stones and inscriptions) and the spiritual (national emblem and ideal) sense.

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ASOKA THROUGH HIS EDICTS : ASTROLOGICALLY

A. B. CHAUDHURI

Asoka, the great Maurya monarch has been receiving the keen attention of scholars since long : His time has been subjected to intense studies from different angles, yet the whole picture of the personality has not yet been fully revealed ; gaps remain here and there, presenting paradoxical images at times. The pali and Sanskrit literature at times presented divergent elements, and Asoka's seeming indifference towards his personal history further compounded the situation. The inscriptions so labouriously executed all around the country have very scanty references about the personal history or life of the monarch. The time of birth of Asoka is also not known for certain, but by using astrology as a tool, certain aspects of the personality and his life history can surely be revealed and may be cross-checked with the recorded events in the life of Asoka, in consonance with extant rules and principles of astrology.

In ancient times, six seasons in a year were reckoned. Later the number came down to three seasons, each having four months, starting from the month of *chaitra,* ending with *chaturmasi* or the last day, generally the full-moon day. This was according to the *purnimanta* system.[1] Under the system, the full-moon days in the months of *Asadh. Kartik* and *Falgun* will be the three seasonal full-moon days. Days were computed on the basis of *tithi* (lunar days). The months corresponded with transit of the Sun starting from *mesha* (aries) to *mina* (pisces).

Thus the sun transited each sign of the Zodiac for one month. Jupiter transits a sign in a year. Hence the moon would indicate the *tithi* and the *janma naksatra*. The sun indicate the month and Jupiter can be of use in identifying the year.

Some sanctity was attributed to the *tithi, janma-naksatra* and month of birth of the King as well as the *nama-naksatra* of the kingdom. Puranic references of releasing the prisoners on the eve of consecration of kings are many. These days were considered auspicious and observed as such. Kautilya's Arthashastra is also explicit on the desirability of protection to certain animals and birds. In this backdrop, if we consider the edicts of the great monarch, we find some clues as to the date of his birth. The operative part of Pillar Edict V runs thus :

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No fish to be killed or sold on three seasonal full-moon days, and at the full-moon day of the month of Tishya (Pausha), for three days (namely the fourteenth and fifteenth days of the particular fortnight and the (next) first day of the fortnight, as also constantly on every uposatha days or fast days. On the very same days in elephant forests and fish preserves of fishermen other varieties of animals also are not to be killed. On the eighth day of a fortnight, the fourteenth and fifteenth days (also) in the Tishya and Punarvasu days, on the three seasonal full-moon days and on all auspicious days, no bull is to be castrated, nor may any he-goats, rams, and boars and other animals which are liable to be castrated, not be castrated. No branding of horses and oxen to be done on Tishya and Punarvasu days, on the three seasonal full-moon days and throughout the days of the fortnight of the seasonal full-moon days.[2]

Attention of readers will be attracted to Tishya and Punarvasu days, Tishya month, the three seasonal full-moon days and the next day of the full-moon days in Pillar Edict V. Tishya naksatra days figure once again in the first separate Kalinga Edict wherein it has been enjoined that the particular edict should be heard on Tishya naksatra days, as also on occasions. The second separate Kalinga Rock Edict also enjoined that the Edict be recited on the Tishya days during the (three) seasons of four months.[3]

Going through these edicts, one notices the importance given to Tishya naksatra and Tishya month in affairs of the state. When one recalls that Varahamihira, the celebrated astronomer-astrologer of yore had ear-marked the constellational triad of Ardra, Punarvasu and Pushya to represent the Kingdom of Magadha as well as the king of Magadha,[4] one would naturally take Pushya month as the birth-month of king Asoka, Tishya (Pushya) naksatra as his birth-star or Janma-naksatra, and Krishna Pratipada as his birth tithi. Punarvasu happens to be the nama-naksatra of the magadhan kingdom, meaning the people of Magadha as well as the ruler of Magadha.[5]

Significance of the 'next day of the seasonal full-moon days' would be clear if we reckon the Uposatha days. Vinay-pitaka prescribes the Purnima, the Amavasya days as Uposatha days when rituals as prescribed are observed. The bhiksus (monks) as well as devotees assemble to discuss religious matters. The devotees can come on the Shuklastami and the Krishnastami days as well. These are the formal uposatha days. It may be observed that the days following the full-moon days have been included in the days of restraint. The edicts of Asoka are explicit in conveying his desire to see that the subjects too were elevated to the standard of moral fervour advocated by the king. As the edicts were to be recited on the *janma-naksatra* days of the king, so the restraint was to be observed on *janma-naksatra* days, in *janma*-month as well as on *janma-tithi*, i.e. Krishna *pratipada*. Here, we draw the inference that Asoka was born in the month of Tishya (Pausha) on a day when the moon was in constellation Tishya (Pushya), on Krishna pratipada tithi. In

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astrological terms, the Sun will be in sidereal (nirayana) sign sagittarius (Dhanu) ; the moon will be in the nirayana sign cancer (Karkataka), in the constellation Tishya (Pushya) that extends from 3°. 20′1″ to 16°. 40′0″ in sign cancer. *Tithi* being Krishna pratipada, the location of the moon shall not be beyond 12° in sign cancer if the Purnima is on the last day of the month of Paush (Decembr 15 to january 14). The earliest time of Purnima (keeping the moon in Pushya naksatra as above, will be about 8½ day before the end of Paush, *i.e.* around 21st Paush. So, the edits themselves suggest that Asoka was born on a day between 21st Paush and 30th Paush, when the moon will be in Pushya naksatra (Tishya), on krishna Pratipada tithi (lunar day).

Astrology is a structured tool delineating planetary configurations in a zodiac of 360° having twelve signs of 30° each. Divisional charts of varying degrees of arc are also prepared to assess the intrinsic strength of planets and houses related to the Lagna or ascendant signifying the nativity. For timing of events, various mathematical systems have been devised keeping the Lagna as the pivot. The structure can be explained thus : time, place and person have been placed one a-top the other, each influencing other by virture of respective Guna, manifesting in events in measurable attributes. Lordship over signs has been assigned to the planets, and the planets have the over lordship over streches of time of varying length going by the term Dasa or major period, antardasa (sub-period again owned by planets) or a particular part of main Dasa, pratyantardasa or inter-period etc. These timing devices are arranged in particular orders. All human activities have been classified and assigned to one of the twelve houses of the zodiac, taking the ascendant or Lagna as the pivot in the horoscope of an individual. Marriage is considered from the 7th house (from lagna) whereas Karma (avocation, profession, etc.) is reckoned from the 10th house. Events in the life of a person are calculated on definite mathematical systems having bearing on planetary co-ordinates in the horoscope. Sage Parashar had devised 42 kinds of Dasa systems to determine timing of events from the horoscope. Here we shall examine the events in the life of Asoka in the light of Vimshottari Dasa and the Yogini Dasa, both propounded by Sage Parashar.

According to the Vimshottari Dasa, marriage takes place during the major period of the 7th lord, in the sub period of the 2nd Lord and in the inter-period of the 9th Lord. The 7th house from Lagna indicates the spouse, the 2nd house indicates relations, the 9th house stands for ritualization of the marriage. Birth in Tishya or Pushya naksatra initiates the major period of Ṣaturn that is of the duration of 19 years. Technically, the marriage to Devi was possible during the major period of Saturn (lord of 2nd house) and sub-period of Jupiter, before the close of 19 years in age. But as the marriage to Devi closely preceded his attaining viceroyalty of Ujjain, marriage could not have taken place during Saturn-Jupiter sub period, as this period is not connected to the Karma Bhava. Hence, his assumption of the office of viceroy at Ujjain could not have taken place at the age of 19. Marriage

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to Devi had evidently taken place during the Mercury Dasa (of 17 years) and suitable sub-period and inter-period, covering the event of his elevation to the high office of Vice-roy at Ujjain. Marriage in the Dasa (major period) of Mercury presents several possibilities. Mercury happens to be lord of the 7th and the 10th houses (Bhava), signifying the marriage and Karma of the nativity. It also indicates that Dhanu (sign Sagittarius) will be the ascendant or Lagna of Asoka. Dhanu is the 7th sign from Gemini (owned by Mercury), and with Dhanu Lagna, Mercury will become lord of the 7th and the 10th. We have already noted that the sun was posited in sign dhanu (Tishya month). The sun and the Lagna both being in Dhanu. Asoka will decidedly respond to attributes assigned to nirayana sign Dhanu (Sagittarius) as Lagna. Without a strong Lagna, nobody rises so high. A vargottama Dhanu Lagna can be safely assumed, whereby the Lagna will be in sign Dhanu posited between 26°41′ and 30°0′. A planet or Lagna is considered vargottama when they are in identical signs in the Navamas chart (1/9th part of a sign) as in the Rasi sign or Rasi chakra. And he was born at Pataliputra. This lagna is related to the time of birth of Asoka. Lagna is the rising sign in the east at the time of birth. The average duration is 2 hours. In fact the strongest position of the lagna will mathematically come at Dhanu 26°48′ whereby the navamas dwadasamsa lagna (the 108th part of lagna) will also fall in the same sign. This lagna point has been worked out mathematically with an error margin of 32 seconds of time. A strong lagna presupposes that the Lord of lagna in strength will be posited in the lagna. Again, a vargottama lagna lord should be in the lagna. Jupiter is the lord of sign Dhanu. The above consideration will place Jupiter at a point between 26°41′ and 30°0′ of sign Dhanu. This nirayana position of Jupiter determines the year of birth of this great monarch. Planet Jupiter attained this location on the 10th and the 11th January, 305 B.C with the Moon in Tishya (Pushya) constellation in Sign Cancer.[6] As the nativity was a Jupiterean, he would be born in the planetary hour of Jupiter on a Thursday. The 10th January 305 B.C. is a Thursday, and the first 1/8th part of the day after sun-rise comprises the planetary hour of Jupiter. Since a vargottama lagna is visualised, the time of birth is also limited within 20 minutes of time from sun-rise. Lagna point moves ahead @ 4 minutes a degree. So we find the approximate time of birth, date of birth, month of birth and year of birth of Asoka who was born at Pataliputra.

Religiosity, selfless devotion to the well-being of subjects, strong determination to proceed along the line chosen by him, without caring for personal gain or comfort would indicate that the King's 'date-sign'[7] will be Pisces (Meena) , another sign of Jupiter, the 28th day of Pausha being the date of birth according to present Bengali calendar. This will place the natal Sun at 28°+ in Dhanu, limiting the position of the moon to 10° degrees in sign cancer. The first 3°20′ arc of sign cancer belongs to the fourth quarter of constellation Punarvasu ; hence the progression of the Moon in Tishya (Pushya) naksatra shall not be beyond 6°40′ arc. In fact, the longitude of the Moon was cancer 3°46′ leaving a Dasa balance of 18 years 4 months 18 days of Saturn Dasa.

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Going back to the question of marriage Asoka was married during mercury major period, in the sub-period of (Mercury) on a Thursday, when Capricorn lagna was running, in the month of Asadh (in the evening). Marriage in the period and sub-period of Mercury will also indicate that the navamsa lagna of Asoka was Dhanu. Mercury - Sun sub period closes at the age of 20 years 9 months 15 days with birth being on the 28th of Paush. Marriage and attaining a viceregal position both occurring in the same sub-period, indicate that Mercury (lord of the 7th and the 10th houses) formed a Rajayoga (highly beneficial yoga or combination) with the Lord of 9th the Sun in the lagna. This Rajayoga would suggest that Mercury and the Sun would be together in lagna in the same navamas (an arc of 3°20′ minutes). As the sun is vargottama being in 28th degree of Dhanu, Mercury is slightly in the back attaining 26°22 minutes in sign Dhanu.

Transit of Jupiter over the 9th house (sign Leo) will be the time of marriage, that being the 2nd house from natal Moon. Marriage does not take place when Jupiter transits the 12th house from the natal moon. This transit of Jupiter is possible only in 20+ years from the time of birth. Being in Leo, Jupiter will aspect the ascendant, natal Jupiter therein as well as the natal sun. So we can safely inter that Asoka married in the 21st year of his birth.

Simultaneous application of Yogini dasa in the examination indicates that the Dasa balance Asoka would have got at the time of birth was Dhanya 2 years 10 months 24 days. At the age of 17 years 10 months 24 days he completed Ulka Dasa, and Siddha Dasa started thereafter. In the case of Dhanu Lagna, Venus is harmful and Malefic, being lord of the 6th as well as the 11th house, signifying disease, trouble, quarrel etc. Lordship over Siddha Dasa is assigned to Venus. However, Siddha is considered to be a benefit dasa. The distribution, in part, of the subperiods in Siddha Dasa are as follows :

End of Ulka Dasa	17	10	24
Siddha Dasa Siddha antardasa	1	4	20
	19	3	4
Siddha - Sankata	1	6	20
	20	9	24
Siddha - Mangala	0	2	10
	21	0	4
Siddha - Pingala	0	4	20
	21	4	24

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According to the Yogini Dasa, marriage would have been consummated during Siddha-Mangala antardasa and this will evidently fall within Vimshottari Mercury Dasa Mercury antardasa. As such there are strong reasons to assert that Asoka's marriage to Devi at Bidisha had taken place during 2 months 10 days of Siddha-Mangala antardasa. The assumption of Vice-regal office was also within this stretch of time. Both these events had taken place in 285 B.C. or 284 B.C. Adjusting the period of 2 months 10 days of Siddha-Mangala sub-period with the month of Asadh (the marriage month), we find that Asoka married at the age of 20+ and in that event, the marriage would have been consummated in 284 B.C. The period of Siddha-Sankata, just preceding the Siddha-Magala will be the time when Asoka accomplished a very hazardous and difficult task, involving peril, in conquering Ujjain.

Now, we find that Asoka was born in the month of Tishya (Paush) when the sun is in Dhanu, in the ascendant or lagna Dhanu, with a very strong Jupiter in the lagna Kendra, as well as in the date-sign of Dhanu, he was essentially a Jupiterean nativity as out of 4 lagnas[7] he was having two in sign Dhanu, one in sign Pisces, both owned by Jupiter. Jupiter in lagna Kendra identical to his own house or exaltation sign, creates a powerful Mahapurush-yoga, extolled by Varahamihira in Brihat Samhita, that goes by the name Hamsa yoga. The strength of the yoga is dependent on the strength of lagna and Jupiter. The lagna and Jupiter are very strong in the horoscope of Asoka (Ecliptic longitude comes to 267°33′ after applying Ayanamsa correction, of 7°51′-chitrapaksha Ayanamsa). Hamsa yoga is present from the date-sign also. Jupiter being in the Dasam-kendra—strongest of the Kendras-and Vargotttama, the person with Hamsa yoga will possess a handsome body ; he will be liked by others. He will be righteous in disposition and pure in mind. His feet will have the markings of conch, lotus, fish and ankusha.

Even with Dhanu Lagna, Hamsa yoga was possible with Jupiter in sign Pisces (Meena), bringing down the year of birth by at least two years+. But that may be ruled out because that would have prevented Pravrajya Yoga (4 planets in lagna with lord of 10th house) in the horoscope ; Lagna would have lost part of its strength. Jupiter in first navamas in Pisces would have effected an exalted Jupiter in Navamsa, but without any connection with the moon and saturn. Another pattern of life would have emerged. Besides, in the navamsa-Dwadasamsa chart Jupiter is in sign Pisces.

How is a nativity of Dhanu (Sagittarius) Lagna in appearance? Standard texts in astrology have to say as follows :

A well proportioned and well-developed body ; tall, large-forehead with bushy eye-brows, long-nose, bright eyes ; charming appearance, graceful look, fair complexion and handsome figure. The face is more square than oval, usually looks at the brighter side of things, courageous, strong drive, ambitious with the fullest confidence in himself fights with

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adverse circumstances with determination. There may be some delay in taking up a task, but once the decision is taken, he strives forward without caring for his personal comfort, even though he knows that such decision might create difficulties for himself. In such cases, he carries on with the work, without caring as to what others would say. Fond of touring, interested in making friendship with foreigners. Spiritual inclination will be there. Sympathetic, generous to others (not to his relations) ; good memory, comprehension power is strong. The native is a commander in his field. Optimistic, aims high. Normally attend to specific work one by one. There are two strands in life—one is material, the other is spiritual, cannot stand injustice, if injustice is done to some body, the native comes forward to effect redressal. Relation with near relatives gets sour, and there are chances of his being away from them emotionally and physically. Generally, takes interest in children rather late and deriving happiness on account of children may not come at all. Will spend a lot for the children ; people not having children will spend after education or temple renovation etc. Kind hearted to outsiders only, the nativity is a failure at home. As the native has strong moral fervour and honesty, the spouse will have to adjust herself with the husband. Expression of love or affection is controlled and subdued. The native is liable to be misunderstood at times on this count. If Mercury, Venus and Saturn are not aspected by Mars, the native is fortunate in having loyal intelligent and well-mannered wife. (In the case of Asoka. Mars aspects Saturn-not Mercury and Venus. Lord of 7th house Mercury is in Dhanu (lagna kendra), hence attained Digvala (directional strength), rendering other planets in Dhanu digvali. Jupiter is also digvali in lagna kendra. Being in association with digvali Jupiter and Mercury, the Sun also gets digvala. Hence Asoka found in Devi of Vidisha a sympathetic, calm, intelligent and loving wife as Devi would have been born in Dhanu Lagna or Dhanu Rasi or in the month or date of Jupiter (i.e. she would have been born in the month of Paush or the date sign would have fallen in sign Dhanu or Sagittarius).

Lagna and Jupiter Vargottama. The Moon in the (second) pada of Pushya consequently in the navamsa of the Sun-Sun being in Dhanu owned by Jupiter-the complexion of Asoka was a mixture of copper and wheatish-bright. Mercury in lagna in the constellation of Purbasadha would have caused skin troubles. He had been verging on obesity when a boy, later trimming down considerably in youth and early career, gaining weight at niddle age ; would have got gout or sciatica on his left leg.

Association of lord of 6th Venus with Mercury (Lord of 7th) will indicated that the nativity will have more than one wives. How many wives did Asoka have? That would be determined by the disposition of the 7th lord Mercury as to in which Pada or quarter of a naksatra Mercury is posited. Being in the 4th Pada of naksatra Purbashada along with the Sun, there would be five wives. Three other planets with Mercury including the 6th

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Lord—all powerful, would contribute one wife each, Jupiter contributing one more that being his own house. This also signifies that Venus was also in Dhanu, attaining digvala being in association of digvali Mercury and Jupiter. Now, Venus is lord of 6th and the 11th-6th from 6th, bhavat bhavam-signifying the second wife as it is 12th from the 7th. In the same analogy, Mars will signify the third wife. It is curious to note that in the horoscope of Asoka. Mars is in the constellation of Saturn (Pushya) in sign Cancer, with the Moon who is also in Pushya naksatra and both are aspected by powerful Saturn from sign Capricorn (Makara). As such, the third queen would have a cruel nature, bold and conspiratorial in disposition, ambitious and scheming. The accounts of Tishyaraksha (Tishyaraksita), blinding Kunal, attempted destruction of the Bodhi-Tree, cutting the branches of the Asoka tree, inflicting acute agony on king Asoka will justify such disposition of planet Mars in the horoscope. The malefic nature would be further intensified by aspect of Ketu on Mars-Moon combination from sign Scorpio. This combination also lends credence to the earlier life of Asoka about his violent nature.

How many children did Asoka have? In various accounts we find the mention of Mahendra and Sanghamitra, Kunala and Tivara (or Tivala). Lord 5th house signifying progeny, is posited in sign Cancer with powerful Moon in his own house and aspected by powerful Saturn (that too in his own house). Mars is debilitated but gets neechavanga (cancellation of debilitation) because of association with the Moon. A planet in own house accords two children. As such, both the Moon and Saturn are capable of giving two children each and the 5th Lord Mars gives one, making the total five. Now aspect of Rahu (Moon's ascending node) on Saturn would have caused miscarriage in one case bringing down the total number to four. Again aspect of Ketu (Moon's descending node) on Mars-Moon combination would suggest that the first-born (Mahendra) was born by virtue of surgical intervention at the time of birth (caesarian baby under modern parlance). This might also mean that Devi suffered acutely at the time of child-birth. Since the fifth lord Mars is a male planet, the fifth house is aspected by strong Jupiter significator of progeny who is also a male planet the number of male-children will be more. We have the record of three sons and one daughter.

Asoka completed Ketu Dasa at the age of 42 years 4 months 18 days and Venus Dasa started for 20 years. The first sub-period is Venus-Venus with duration of three years four months. Venus, lord of 6th is digvali, attained Tamasic nature being in the constellation of Ketu (Mula). Ketu is equated with Mars (sanivat Rahu, Kujavat Ketu) and the aggressiveness and fury has been accentuated by virtue of Rahu's aspect on Saturn. This is the period when aggressive onslaughts on Kalinga were carried out. Kalinga was conquered. The corresponding Yogini Dasa is Bhramari (from 38 years 10 months 24 days to 42 years 10 months 24 days). The spread of Bhramari Dasa in sub-periods is as follows.

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End of Dhanya Dasa	38	-	10	-	24
Bhramari-Bhramari	0	-	5	-	10
Bhramari-Bhadrika	0	-	6	-	20
Bhramari-Ulka	0	-	8	-	10
Bhramari-Siddha	0	-	9	-	10
Bhramari-Sankata	0	-	10	-	20
Bhramari-Mangala	0	-	1	-	10
Bhramari-Pingala	0	-	2	-	20
Bhramari-Dhanya	0	-	4	-	0
	42	-	10	-	24

Bhramari-Mangala sub-period ends at 42 years 4 month 4 days, and Bhramari-Pingala takes over, Kalinga conquest was complete in Bhramari-Pingala and Bharamari-Dhanya sub-periods. In terms of Vimshottari Dasa, the period falls in Venus Dasa, Venus antardasa and Sun Pratyantardasa. This particular pratyantardasa starts 6 months 20 days after the commencement of Venus Dasa and runs for two months. This happened when Asoka was 43 years of age, placing Kalinga war in 262 B.C. The violence and fury in the war would be clear when we observe that strong Mars received the aspect of Saturn carrying the influence of incendiary and destructive Rahu.

Asoka was passing through Bhadrika Yogini Dasa between the age 42 years 10 months 24 days and 47 years 10 months 24 days. The lordship of Bhadrika is assigned to Mercury who stands for intellect. Mercury, in close proximity to the Sun will have effect on the Sun who stands for soul, psyche. Mercury is in the constellation of Venus and in Venus dasa, the Jeevra planet of Mercury, the effect of the 6th house turmoil in psyche can be expected. Mercury and Venus are powerful hence the turmoil was an upheaval, changing the course of life.

Vimshottari Venus-Sun sub period is one year's duration, ending 46 years 8 months 18 days of age, and is followed by Venus-Moon sub-period of the year 8 months. Moon stands for mind and aspect of Saturn carrying the influence of Rahu and in association of Mars brought about a depression sequel to bloodshed and human misery. This is the period of reticence that came over Asoka after the Kalinga war. In Venus-Mars sub period he finds a way out of the gloom and takes shelter of the Buddha. Venus-Rahu is the period of pilgrimage and extensive touring of the country.

Venus Dasa period is of 20 years and the first three sub periods cover respectively 3 years 4 months, 1 year and 1 year 8 months. Venus in Lagna, digvali with the Sun and

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Jupiter forms a powerful Shatru-yoga in the Sun-sign of the nativity, causing a deep turmoil in the psyche (the Sun signifies soul, Venus being lord of sixth and eleventh causes turmoil in the mind). The natal Moon is in association with Mars both in the constellation of Saturn (Pushya) aspected by Saturn, enabling the nativity to go very deep in his thought. Both the Moon and Mars are thereby controlled by Saturn-a planet of Renunciation-himself posited in the constellation of the Sun (digvali-lord of 9th). As such, Saturn influences the 9th house (Dharma bhava) as well as the Sun standing for royal power. As the conflict in mind was the result of royal adventure in the conquest of Kalinga, so the effect was renunciation. Change in religion or conversion to Buddhism came to pass as Saturn receiving the aspect of separative Mars and Rahu takes on a separative Guna. Association of the Moon in this conglomeration enhances the effectiveness of the combination. Saturn influences Sun by virtue of being in the constellation of Uttarasadha whose lordship goes to the Sun, lord of 9th house signifying religion. The separative influence of Saturn caused the conversion to Buddhism.

With Dhanu lagna of Asoka, the normal death inflicting (maraka) period would be Mercury-Saturn for his father. Association with Mercury lord of 2nd infused the maraka-guna (death inflicting quality) to Jupiter and Venus too. The luminaries are not marakas themselves. Mercury being lord of 2nd house is a maraka alright. As such, mercury-Jupiter sub-period will be a maraka period for Bindusara. Jupiter being lord of 8th brought in disease to the native in his sub period. From the horoscope of Asoka, it is clear that Bindusara had medium span of life (not beyond 62½ years). Jupiter gives result during the second part of his sub-period and the length of the Mercury-Jupiter sub-period is 2 years 3 months 6 days. So Bindusara died by the time Asoka attained 32 years 8 months 9 days of age. The worst result of Jupiter sub-period is obtainable in the month of Magha (15 January to 14 February) which comes next to month Paush. In August 274 B.C. Asoka completes his Mercury-Rahu sub-period when Asoka was 30 years 5 months of age. In the second half of Mercury-Jupiter sub-period, month Magha comes after 1 year 5 months. So death of Bindusara took place in or around February-March of 273 B.C. when Asoka was in his 32nd year of age. At the time of death of Bindusara transit Saturn was in sign Aquarius (Kumbha) aspecting sign Leo (Simha), transit Rahu sitting therein with Jupiter. Asoka was called back to the capital with the information of his ailing father and he was attending the sick king. He took over charge as according to shastras princes do not have ritual impurity (kalasauch) for ascending the throne.

It is to be noted that the Jeeva-graha of the 8th house of Bindusara (signifying longevity) is Jupiter and the Sharira-graha of the same house is the Sun. Between the two Jupiter is much more stronger ; hence a long period of protracted illness preceded the death of Bindusara. The death of Bindusara corresponds to the close of Sankata-Siddha sub-period.

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Vimshottari Mercury-Saturn starts and a fratricidal war followed. With the close of Mercury dasa, Ketu Dasa starts for 7 years. 2 years 8 months 9 days of Mercury-Saturn, 4 months 27 days of Ketu-Ketu and 1 year 2 months of Ketu-Venus sub-periods, totalling a period of 4 years 3 month 6 days is spent in fratricidal war and the abhisheka or consecration comes off in 269 B.C. during the period of Ketu-Sun in the month of Baisakh (April-may). The corresponding Yogini period is Dhanya-Dhanya sub-period.

Asoka had married Asandhimitra during Mercury-Jupiter Sub-period between the age of 30 years 5 months 4 days and 32 years 8 months 9 days. She was made the queen consort when Asoka ascended the throne of Magadha. As she was the second wife to Asoka, she would be represented by sign Taurus owned by Venus. Asoka was running Venus dasa till the age of 62 years 4 months 18 days. The last sub-period of Venus dasa is Venus-ketu with 1 year 2 months duration. Ketu in the 7th from sign Taurus is a strong maraka (death-inflicting planet) for Asandhimitra. Venus in association with the Lord of 2nd from Taurus also acquires the death inflicting capability. Asandhimitra died in the month of Jaisthya 244 B.C. when Asoka was 61 years 7 months of age. In Yogini dasa, Asoka was passing through the Sankata Dasa Sankata antardasa from age 59 years 10 months 24 days to 61 years 8 months 4 days.

At the age of 62 years 4 months 18 days Asoka completed Venus dasa and entered Sun Dasa of 6 years duration. Sankata Yogini dasa was running simultaneously till 67 years 10 months 24 days. After two years of death of Asandhimitra, Tishyaraksha or Tishyarakshita was made the queen consort. This event would naturally fall in 242 B.C., Vimshottari Sun-Rahu sub-period running at the time. The Yogini dasa running was Sankata-Bhramari sub-period. Bhramari sub-period is controlled by Mars. We discussed earlier about Mars representing the third wife of Asoka with its effects on the personality of the particular queen. Sankata Yogini dasa is considered to be an evil period producing bad results ; Bhramari is also an evil sub-period. The lordship of Sankata Dasa has been assigned to Rahu. In Vimshottari also, Rahu sub-period in Sun Dasa was running. The Dasa lord and Antardasa Lord are bitter enemies. The disastrous effect of this decision is known to all students of history. Tibetan accounts relate her unseeming activities in blinding Kunala, in attempted destruction of the Bodhi-tree, in cutting off the branches of the Ashok tree. These misdeeds of Tishyarakshita subjected Asoka to acute agony of mind which were the results of Sun-Rahu sub-period (and Sankata major period too). In fact, all these actions fo Tishyarakshita were in flagrant disregard to royalty (Rahu is arch-enemy of the Sun and the Moon) and to further her interests. Intrigues in the royal household had surfaced, eroding the power of the king.

Sun dasa ended at the age of 68 years 4 months 18 days. The king had been donating generously to the Bhiksus gold and other valuables. (Sun represents gold). The Crown Prince

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was advised by some ministers that gold and valuables once presented to the Bhiksus could not be brought back to the royal coffer. With the onset of Moon dasa at the age of 68 years 4 months 18 days silver took the place of gold (the Moon stands for silver) and continued during the sub period of Moon-Moon (10 months in duration). It was argued that even with presenting of silver, the royal coffer was getting impoverished. The last offer made by Asoka, ruling over the largest empire in Indian history, was an 'amlaki' on an earthen plate.

The king died in the Moon-Saturn sub-period at the age of 72 years 4 months in the month of Baisakh (April-May) 233 B.C. The corresponding Yogini Dasa comes at Dhanya Dasa Ulka antardasa ending on 72 years 4 months 24 days. Lordship of Ulka has been assigned to Saturn who is the Lord of 2nd house, posited therein and Ayuskaraka too.

A Horsoscope of King Asoka is given below for information of interested readers. We have discussed some of the event in his life in the light of extant astrological principles.

Raja Asoka

Birth data : Born 10.1.305 B.C. (Julian calendar) around 6-53 minutes (local time) at Pataliputra (Patna) corresponding to 28th day of Paush, Thursday, Krishna pratipada tithi, Pushya (Tishya) naksatra, Dhanu Lagna, Chitrapaksha Ayanamsa 7°51′

		Rahu 4	
	Rasi		Moon 8 Mars 8
Saturn 21			
Asc Jupiter 21 Sun 21 Mercury 20 Venus 19	Ketu 18		

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Saturn	Venus		
	NAVAMSA		Rahu
Ketu			Moon Mars
Asc Jupiter Sun	Mercury		

Spread of Vimshottari Dasa and Yogini Dasa vis-a-vis Events in Asoka's Life.
Longitude of Moon : Cancer 3°46′ on 10.1.305 B.C. at 6.53 a.m. at Pataliputra (Patna).

Vimshottari Dasa	y - m - d		Yogini Dasa		y - m - d
Balance at birth =			Balance at birth =		
Saturn	18 - 4 - 18			Dhanya Dasa	2 - 10 - 24
Mercury-Mercury	2 - 4 - 27			Bhramari Dasa to Ulka Dasa end	15 - 0 - 0
		284 B.C.			1 - 4 - 10
	20 - 9 - 15				19 - 3 - 4
			Conquest of Ujjain	Siddha-Sankata	1 - 6 - 20
					20 - 9 - 24
			Marriage to Devi	Siddha-Mangala	0 - 2 - 10
					21 - 0 - 4
			Viceroy of Ujjain	Siddha-Pingala	0 - 4 - 20
	(Conquest of Ujjain Marriage of Devi Viceroy of Ujjain Birth of Mahendra)				21 - 4 - 24
		283 B.C.	Birth of Mahendra	Siddha-Dhanya	0 - 7 - 0
Mercury-Ketu	0 - 11 - 27				21 - 11 - 24

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	21 - 9 - 12		
Mercury-Venus	2 - 10 - 0	Birth of Sanghamitra	281 B.C.
	24 - 7 - 12		
Mercury-Sun to Mercury-Rahu	5 - 9 - 21		
	30 - 5 - 3		
Mercury-Jupiter	2 - 3 - 6	Death of Bindusara Ascends throne Marries Asandhimitra	273 B.C.
Mercury-Saturn	2 - 8 - 9	Fratricidal war	
Ketu-Ketu	0 - 4 - 27		
Ketu-Venus	1 - 2 - 0		
	36 - 11 - 15		
Ketu-Sen	0 - 4 - 6	Consecration	269 B.C.
	37 - 3 - 21		
Ketu-Moon to Ketu-Mercury	5 - 0 - 27	Consecrated as Priyadarshin	263 BC.
End Ketu Dasa	42 - 4 - 18		
Venus-Venus	3 - 4 - 0	Kalinga war	262 B.C.
	45 - 8 - 18		
Venus-Sun	1 - 0 - 0		

	Siddha-Bhramari	0 - 9 - 10
Birth of Sanghamitra		22 - 9 - 4
	Siddha-Bhadrika	0 - 11 - 20
		23 - 8 - 24
	Siddha-Ulka	1 - 2 - 0
End of Siddha Dasa		24 - 10 - 24
	Sankata-Sankata	1 - 9 - 10
		26 - 8 - 4
	Sankata-Mangala	0 - 2 - 20
		26 - 10 - 24
	Sankata-Pingala	0 - 5 - 20
		27 - 4 - 4
	Sankata-Dhanya	0 - 8 - 0
		28 - 0 - 4
	Sankata-Bhramari	0 - 10 - 20
		28 - 10 - 24
	Sankata-Bhadrika	1 - 1 - 10
		30 - 0 - 4
Death of Bindusara	Sankata-Ulka	1 - 4 - 0
Marries Asandhimitra		31 - 4 - 4
Ascends throne	Sankata-Siddha	1 - 6 - 20
End of	Sankata Dasa	32 - 10 - 24
	Mangala Dasa	1 - 0 - 0
	Pingala Dasa	2 - 0 - 0
Consecration	Dhanya-Dhanya	0 - 3 - 0
		36 - 1 - 24
Dhanya Dasa remander		2 - 9 - 0
		38 - 10 - 24
Kalinga War	Bhramari Dasa	4 - 0 - 0
		42 - 10 - 24
	Bhadrika Dasa	5 - 0 - 0

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Venus-Moon	1 - 8 - 0					
End of Venus-Moon	48 - 4 - 18				Ulka Dasa	47 - 10 - 24
Venus-Mars	1 - 2 - 0					6 - 0 - 0
	49 - 6 - 18				Siddha Dasa	53 - 10 - 24
Venus-Rahu	3 - 0 - 0	Mission to Tamraparni	253 B.C.			7 - 0 - 0
	52 - 6 - 18					60 - 10 - 24
Venus-Jupiter	2 - 8 - 0					
	55 - 2 - 18					
Venus-Saturn	3 - 2 - 0					
	58 - 4 - 18					
Venus-Mercury	2 - 10 - 0					
	61 - 2 - 18					
Venus-Ketu	1 - 2 - 0	Death of Asandhimitra	244 B.C.	Death of Asandhimitra	Sankata Dasa	8 - 0 - 0
End of Venus Dasa	62 - 4 - 18					
Sun-Sun	0 - 3 - 18			Tishyarakshya made queen consort		68 - 10 - 24
	62 - 8 - 6					
Venus-Mercury	0 - 6 - 0					
	63 - 2 - 6					
Sun-Mars	0 - 4 - 6					
	63 - 6 - 12					
Sun-Rahu	0 - 10 - 24	Tishyaraksha made Queen Consort	242 B.C.		Mangala :	1 - 0 - 0
	64 - 5 - 6					69 - 10 - 24
Sun-Jupiter	0 - 9 - 18				Pingala :	2 - 0 - 0
	65 - 2 - 24					71 - 10 - 24
Sun-Saturn	0 - 11 - 12	Attempted destruction of Bodhi Tree	239 B.C.			
	66 - 2 - 6					
Sun-Mercury	0 - 10 - 6					
	67 - 0 - 12					
Sun-Ketu	0 - 4 - 6					

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	67 - 4 - 18				
Sun-Venus	1 - 0 - 0				
End Sun Dasa	68 - 4 - 18				
Moon-Moon	0 - 10 - 0	Practically oses control over administration			
	69 - 2 - 18				
Moon-Mars	0 - 7 - 0				
	69 - 9 - 18				
Moon-Rahu	1 - 6 - 0				
	71 - 3 - 18				
Moon-Jupiter	1 - 4 - 0				
	72 - 7 - 18				
Moon-Saturn	1 - 7 - 0	Death of Asoka	233 B.C.	Death of Asoka Dhanya	3 - 0 - 0
	74 - 2 - 18				74 - 10 - 24

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Prof. Samir Kumar Mukherjee	:	Head, Department of Museology, Calcutta University.
Dr. D. C. Bhattacharyya	:	Professor, Department of Fine Arts, Punjab University.
Dr. Shyamalkanti Chakravarti	:	Director/Secretary, Indian Museum, Calcutta.
Dr. N. N. Bhattacharyya	:	Professor (Retd.), Department of Ancient Indian History & Culture, Calcutta University.
Shri Jaikishandas Sadani	:	Editor, Bharatiya Sanskriti Samsad, Calcutta.
Dr. Arun Kumar Biswas	:	Mahendralal Sircar Research Professor in History of Science, Asiatic Society.
Dr. A. B. Chaudhuri	:	Deputy Inspector General, Tripura (Retd.).

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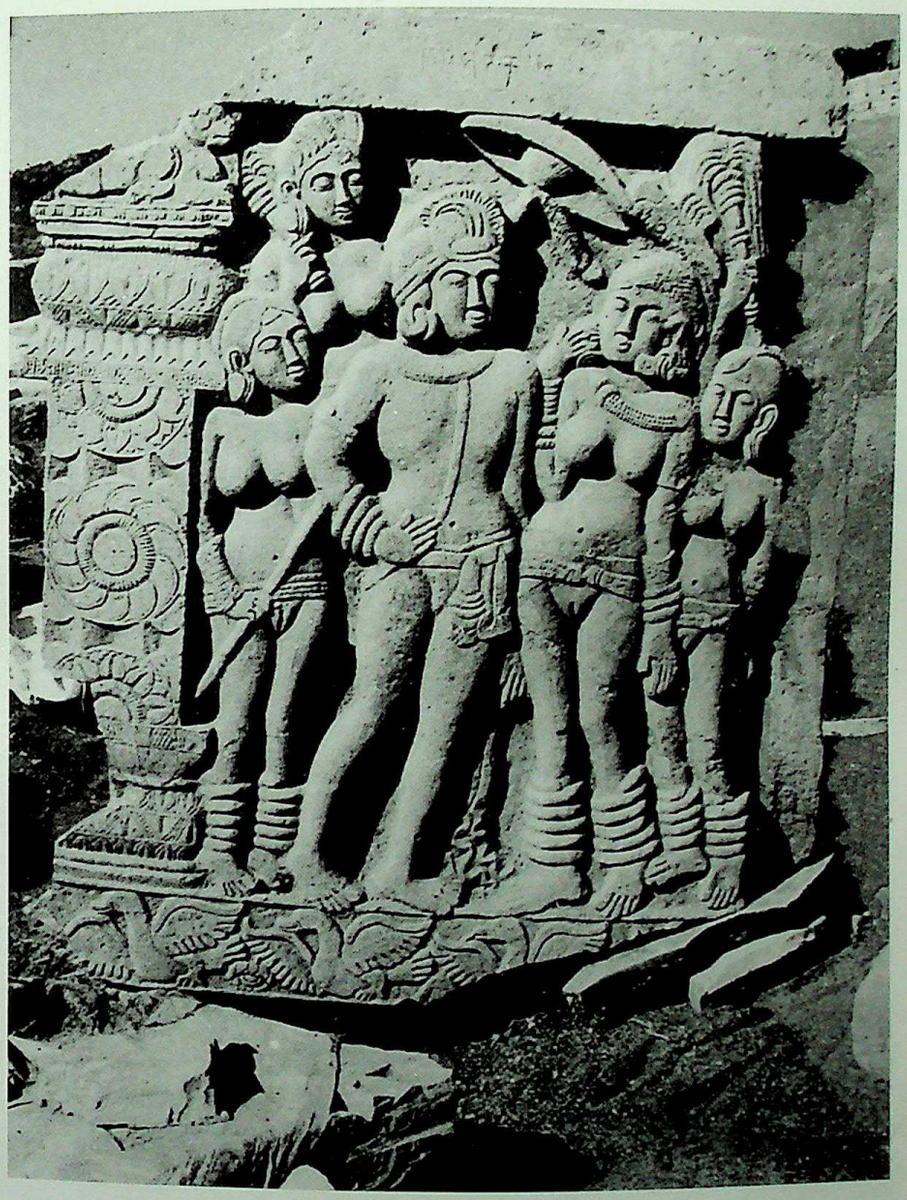
MAURYAN BUDDHISM; UNIQUE EVIDENCES FROM SANNATI AND KANAGANAHALLI IN KARNATAKA



Stone panel showing Ashoka with attendants and queen, Kanaganahalli, Karnataka, c. 1st Century B. C.

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Inscription in 1st Century B. C. Brahmi recording the name of King Ashoka, Kanaganahalli, Karnataka.

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DISCOVERY OF REMAINS OF ASHOKAN PILLAR AT KACHHI GHAT — PATNA CITY

Exposed round stone piece in the courtyard.

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Exposed Mauryan Bricks.

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Sand stone lintels with grooves for fixing wooden dowels.

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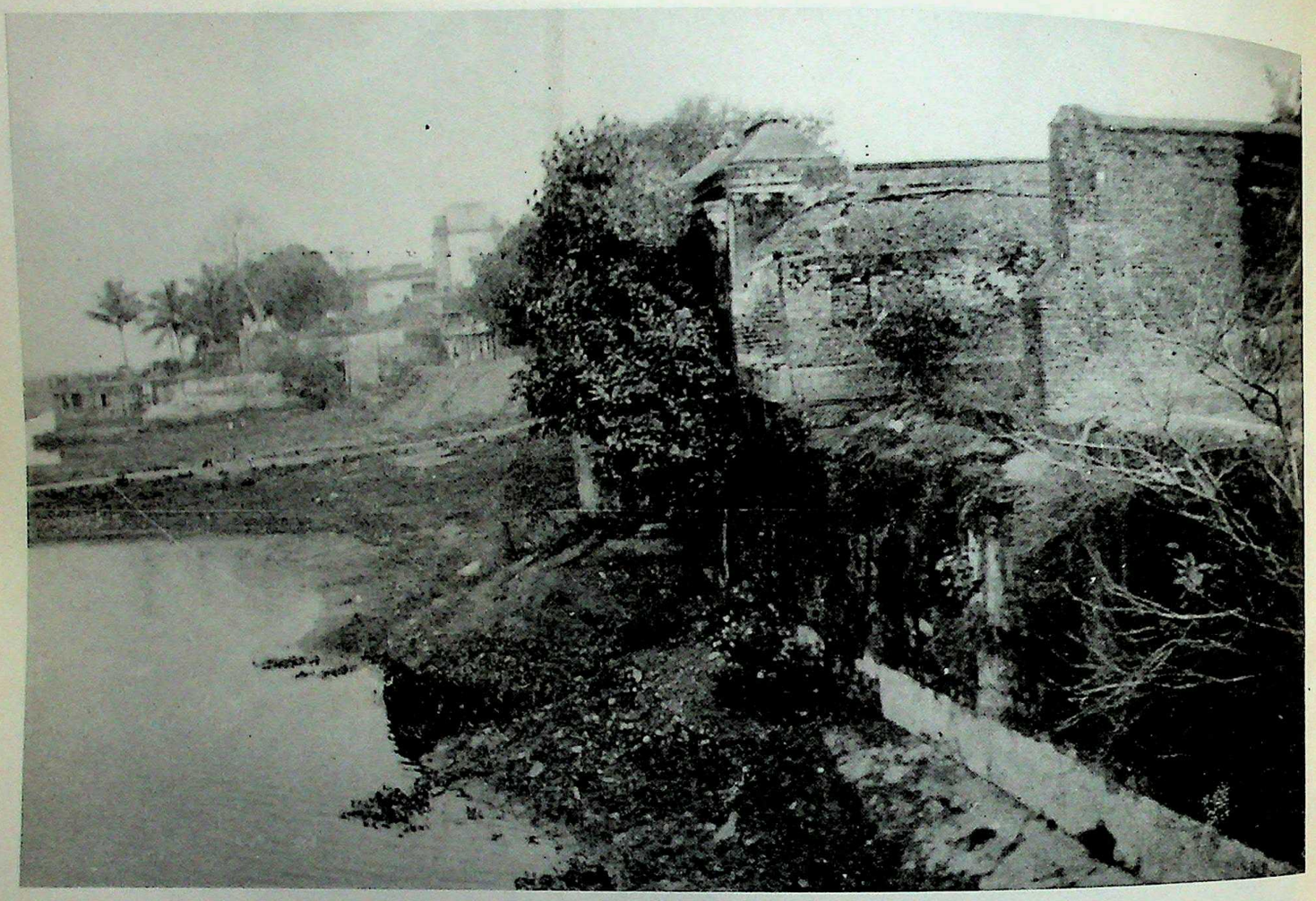

Old Rampart wall.

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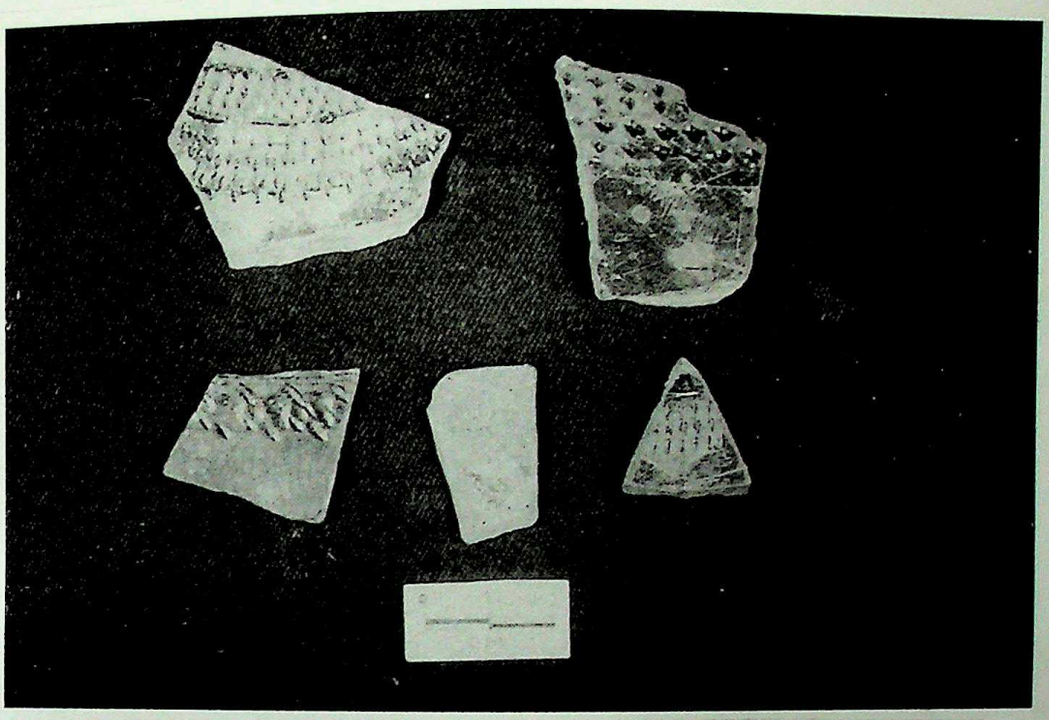
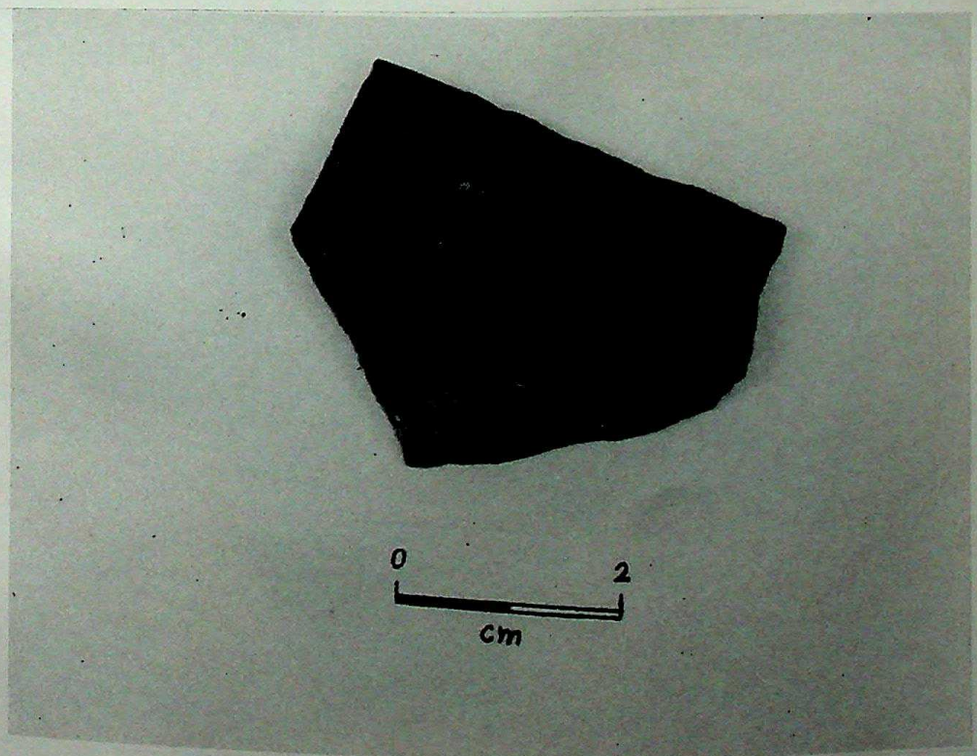
RECENT DISCOVERY OF ROULETTED WARE IN MAHASTHANGARH REGION OF BANGLADESH : AN ARCHAEOLOGICAL PERSPECTIVE



Rouletted Ware from Mahasthan region.



Rouletted Ware from Ramsahar (Mahastan region).

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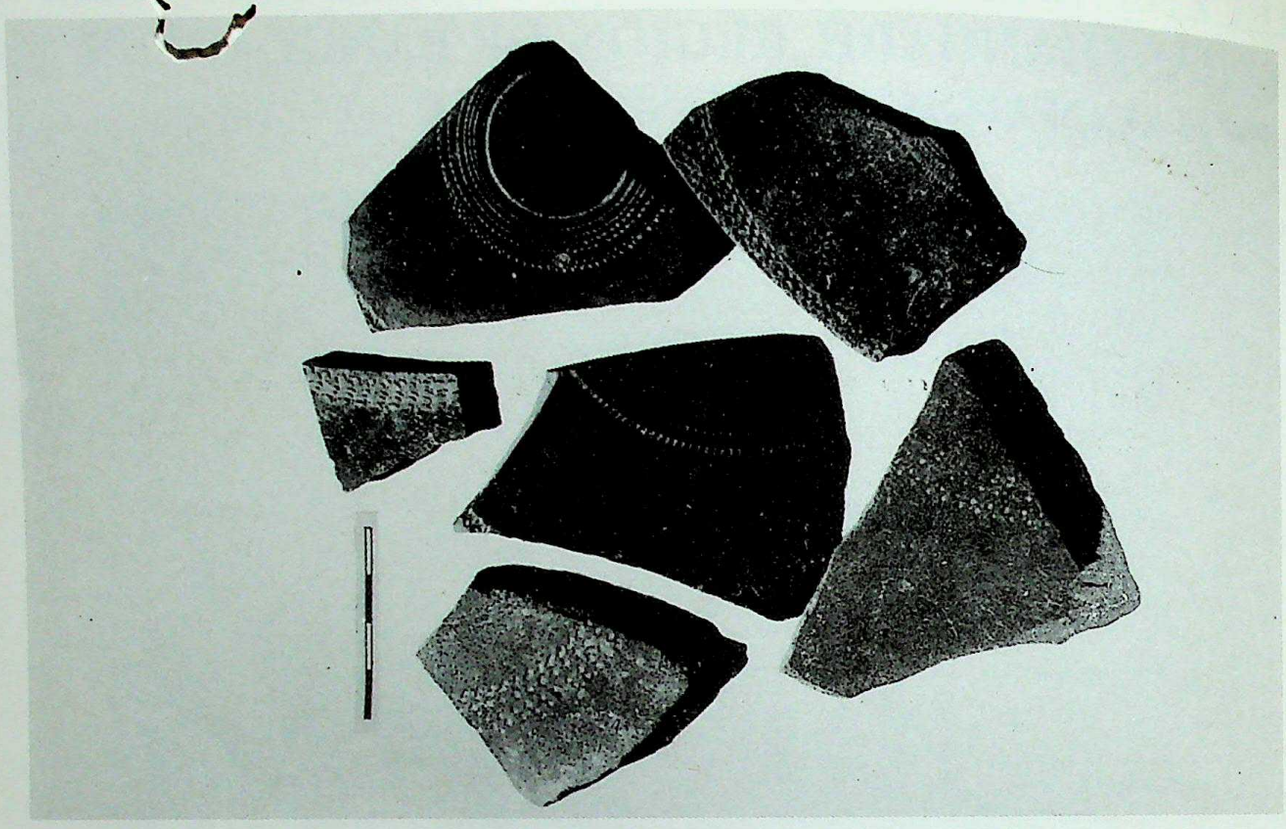
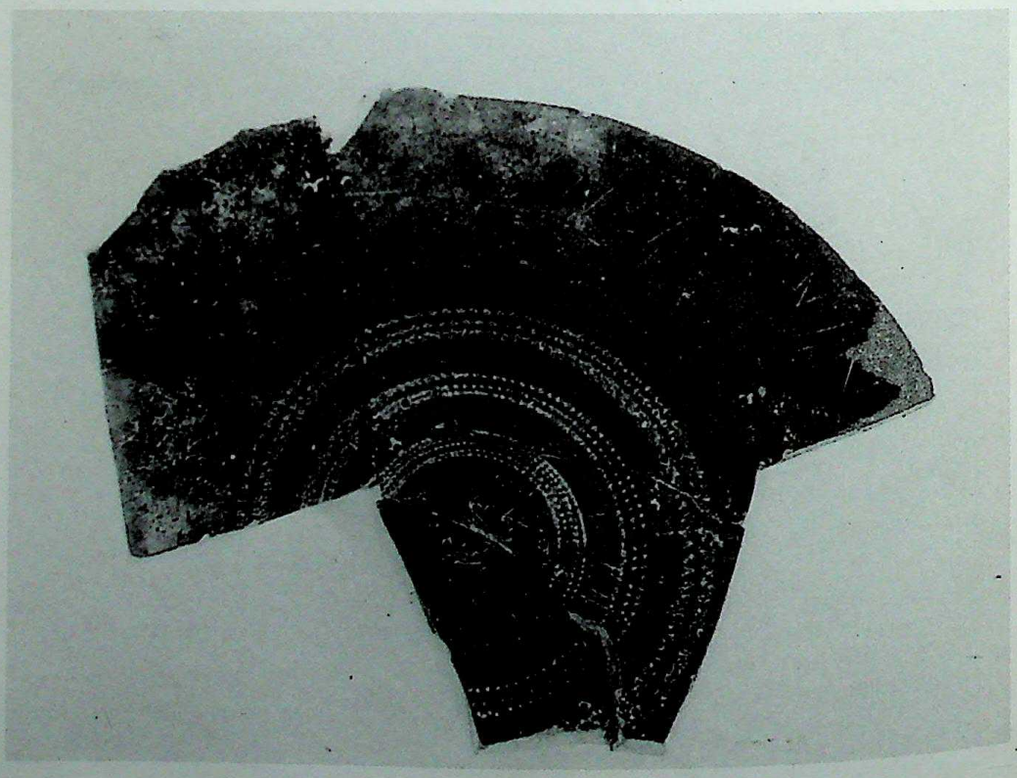


Rouletted Ware from Arikamedu (After Vimala Begley 1996).



Rouletted Ware from Arikamedu (After Vimala Begley 1996).

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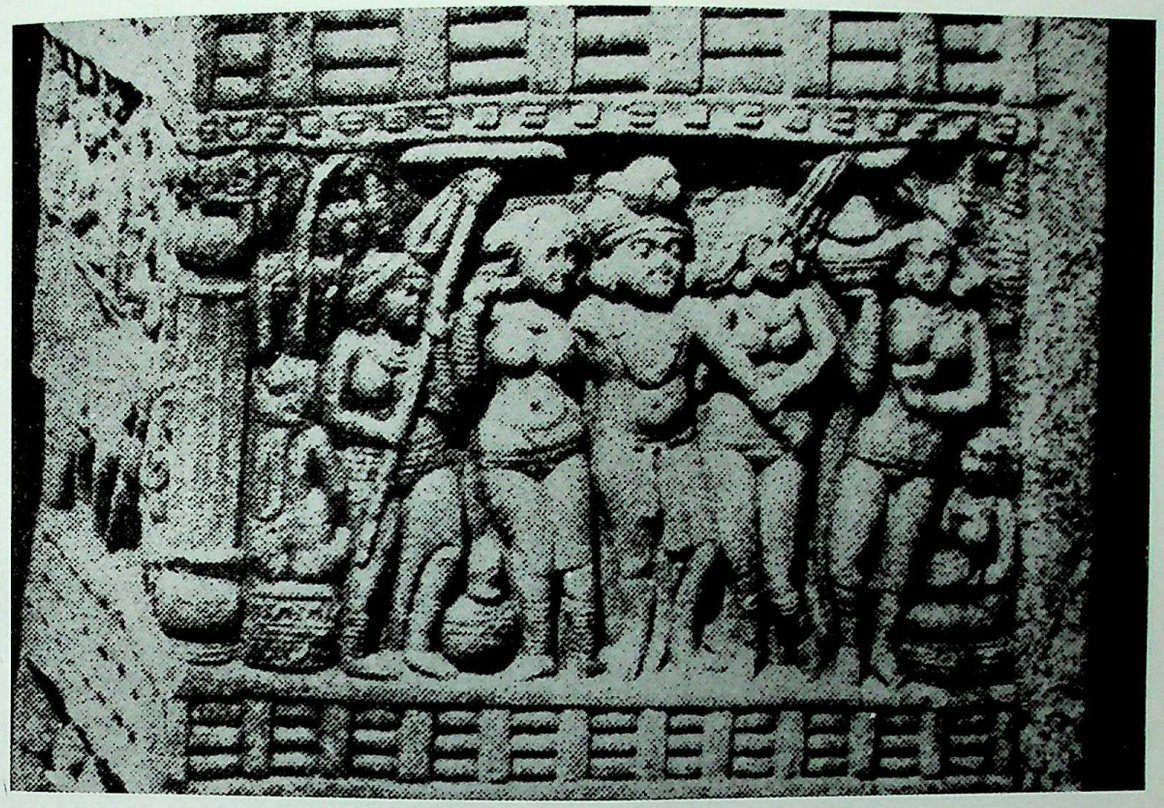
ASHOKA : HIS IMAGES



The east-face Sanchi panel showing the King Ashoka flanked by his two queens.

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Ashoka's visit to Bodhi tree on eastern gateway of Sanchi Stupa.

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Sandstone image of Ashoka, 551 A.D., China, Courtesy : Chengdu Municipal Institute of Cultural Relics and Archaeology, China.

Sandstone image of Ashoka, 551 A.D., backview.

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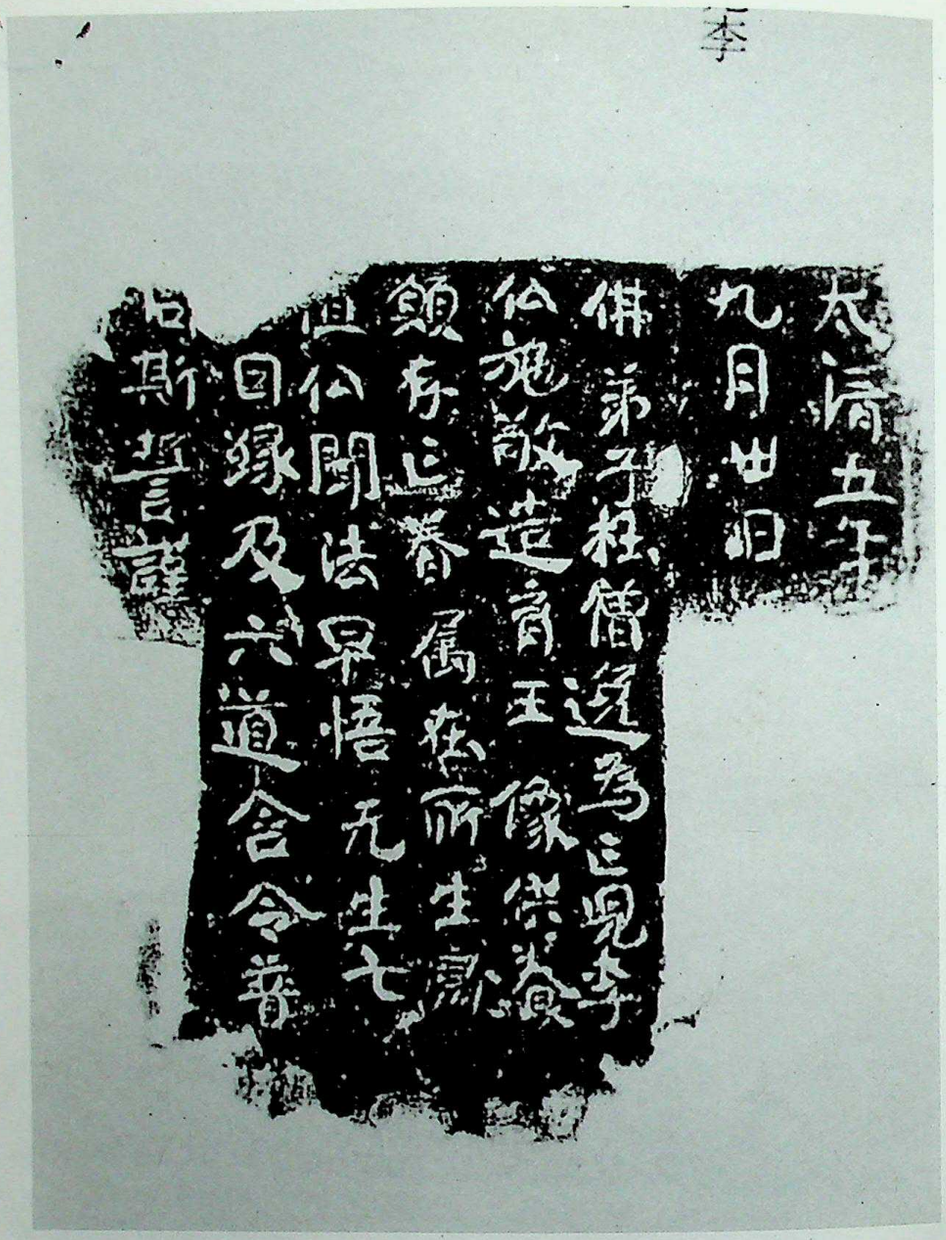

Inscription on the backslab of the sandstone image of Ashoka,
551 A.D., China.

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Imaginary portrait of Ashoka.

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2002-2003

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